

Hensdale

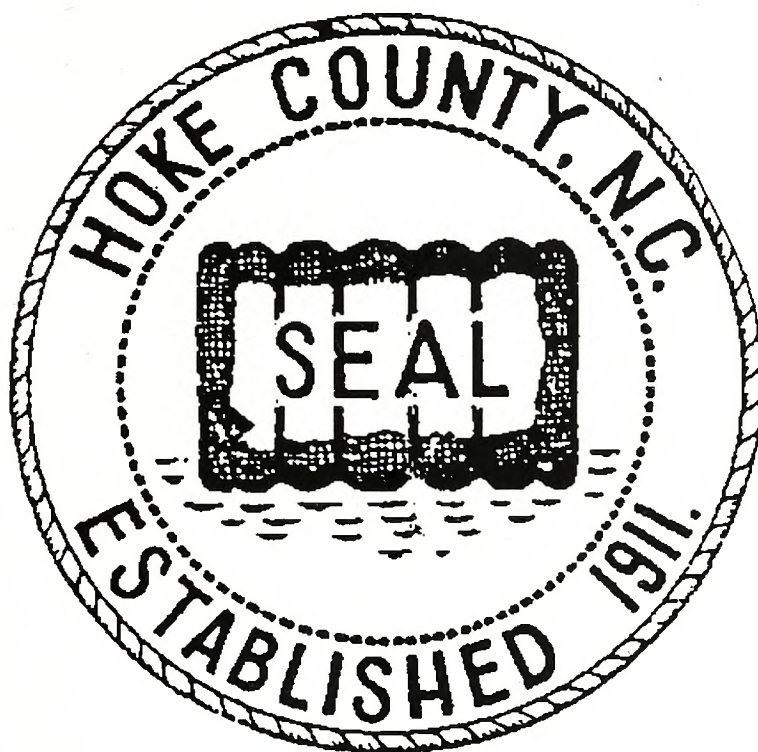


North Carolina Department of Transportation  
Division of Highways  
Statewide Planning Branch

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# *Hoke County*

## *Thoroughfare Plan*



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February 1996



# HOKE COUNTY THOROUGHFARE PLAN

Prepared by the:  
Statewide Planning Branch  
Division of Highways  
North Carolina Department of Transportation

In Cooperation with:  
Hoke County  
The Federal Highway Administration  
U.S. Department of Transportation

March, 1996

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## ACKNOWLEDGEMENTS


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## **CHAPTER 1**

### **INTRODUCTION**

Hoke County is located in the southcentral section of North Carolina near the Fayetteville Urbanized Area, as shown in Figure 1. Created in 1911, it is mostly a rural county of 243,840 acres with the City of Raeford designated as the County Seat. Only three years after its creation, Hoke County lost approximately one-third of its territory in the creation of the Fort Bragg Military Reservation. This Fort remains one of the largest in the United States and has a significant impact upon the economy of Hoke County.

Major roads in Hoke County include US 401, US 15-501, NC 211, and NC 20. These all lead to major urban areas within the State including Fayetteville, Raleigh, and Chapel Hill/Durham. There are eight townships in Hoke County, with the Raeford Township containing almost half of the County population. The population of Hoke County according to the 1990 Census was 22,498 persons and the 1996 forecast is 27,448 persons.

On February 20th, 1978, the Hoke County Board of Commissioners adopted a resolution requesting the North Carolina Department of Transportation to develop a thoroughfare plan for Hoke County. A Hoke County Thoroughfare Plan was completed in February, 1979, but never mutually adopted by the Hoke County Board of Commissioners and the North Carolina Department of Transportation.

On January 26th, 1995, a letter was sent from Hoke County to the North Carolina Department of Transportation requesting an update of this Thoroughfare Plan. The letter stated that Hoke County has experienced rapid growth over the last four to five years which has significantly increased traffic on the rural roads in the eastern portion of the County. In addition, the County is beginning an update of the Land Use Plan and felt having the two plans updated concurrently would assist in coordinating all future development in the County as well as provide timely data for local decision makers.

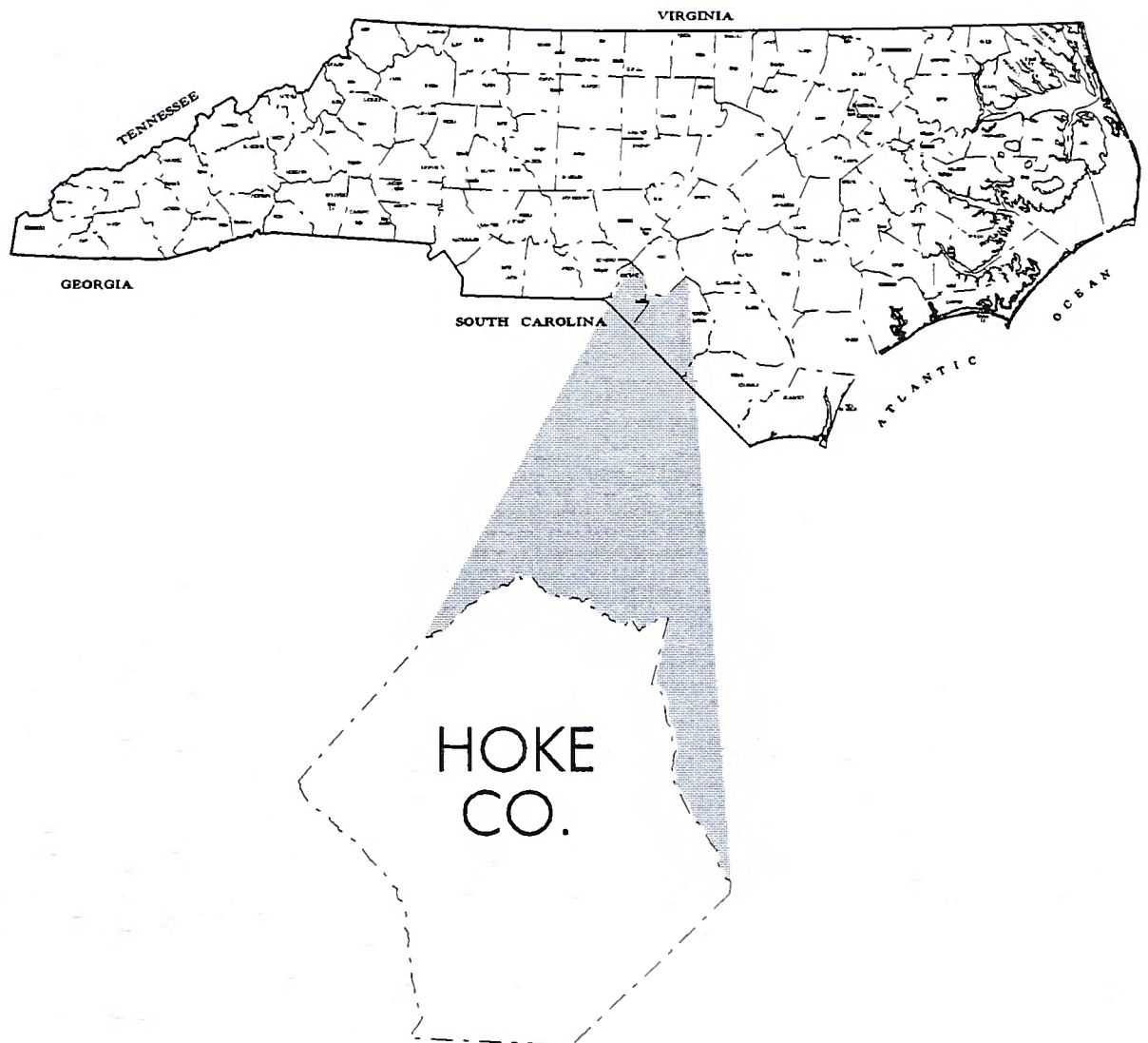
The objective of thoroughfare planning is to enable the transportation network to be progressively developed to adequately meet the transportation needs of a community or region as land develops and traffic volumes increase. By not planning now for our future transportation needs, unnecessary costs to the physical, social, and economic environment may very well be incurred. Thoroughfare planning is a tool that can be used by local officials to plan for future transportation needs, while at the same time reducing the costs to our environment.

The primary purpose of this report is to present the findings and recommendations of the thoroughfare plan study conducted for Hoke County. The secondary purpose of this report is to document the basic thoroughfare planning principles and procedures used in developing these recommendations. This report can be divided into three parts. The first part of the report, covered in Chapter 2, covers the highlights of the study. Chapters 3 and 4 provide a detailed description of the Thoroughfare Plan study. Chapter 5 presents the recommendations for improvements and addresses different methods by which these recommendations can be implemented. Chapter 6 details the public involvement process used to develop the Thoroughfare Plan.

Information that will be especially useful is provided in the Appendix. It provides a detailed tabulation of all routes on the Thoroughfare Plan with existing and projected traffic volumes and recommended cross-sections. In addition, more information pertaining to six areas can be found in the report titled "Generic Chapters For Thoroughfare Plan Reports" at the NCDOT Statewide Planning Branch. The six areas it addresses are as follows:

1. Transportation Planning Principles and Improvement Strategies
2. Level of Service Definitions
3. Typical Thoroughfare Cross Sections
4. Recommended Subdivision Ordinances
5. Public Transportation
6. Administrative Controls and Implementation Tools

# ***GEOGRAPHIC LOCATION FOR HOKE COUNTY NORTH CAROLINA***



**FIGURE 1**



## **CHAPTER 2 HIGHLIGHTS**

Major highlights of the 1996 Hoke County Thoroughfare Plan are outlined below. The Thoroughfare Plan Map is shown in Figure 2. Projects included in the 1996-2002 NCDOT Transportation Improvement Program are shown in parenthesis.

1. Widen US 401 to a multi-lane facility from the Scotland County line to US 401 Business north of Raeford. (R-3333)
2. Widen NC 211 to a multi-lane facility between the Moore County line and the City of Raeford. (R-2592)
3. Designate a NC 211 Bypass around Raeford utilizing State Routes 1202 (McMillan Road), SR 1207 (Buie Road), SR 1139 (Chisholm Road), and SR 1138 (Maxwell Road).
4. Widen SR 1406 (Rockfish Road) to a multi-lane facility.
5. Widen SR 1305 (McDougal Road) to a multi-lane facility.
6. Widen SR 1420 (Townsend Road) to a multi-lane facility
7. Widen SR 1003 (Camden Road) from SR 1406 to the Cumberland County line to a multi-lane facility.
8. Widen SR 1418 (Wayside Road) to a multi-lane facility.
9. Widen Plank Road on the Fort Bragg Military Reservation to a multi-lane facility.
10. Widen SR 1411 (Bowen Road), SR 1412 (Parker Church Road), and SR 1413 (Monroe Road) to three-lane facilities with a center turn lane.
11. Widen NC 20 to provide two 12-foot (3.6 m) lanes, paved shoulders, and turn lanes at major intersections from the Robeson County line to the Raeford Urban Planning Boundary.
12. Widen the following to provide 12-foot (3.6 m) lanes with paved shoulders: SR 1001 (Shannon Road), SR 1003 (Camden Road), SR 1105 (Old Wire Road), SR 1124 (Gibson Road), SR 1138 (Maxwell Road), SR 1139 (Chisholm Road), SR 1202 (McMillan Road), SR 1207 (Buie Road), SR 1211 (Walters Road), SR 1214 (Gallaway Road), SR 1230 (Addall Road), SR 1300



(Vass Road) 1412 (Parker Church Road), SR 1413 (Monroe Road), SR 1422 (Phillipi Church Road), SR 1424 (Ritter Road), SR 1432 (Hendrix Golf Course Road), and SR 1441 (Davis Road).

13. Intersection improvements at the following locations: SR 1214 (Gallaway Road) and SR 1211 (Walters Road), SR 1207 (Buie Road) and SR 1139 (Chisholm Road), SR 1138 (Maxwell Road) and SR 1001 (Shannon Road), SR 1406 (Rockfish Road) and SR 1422 (Phillipi Church Road), and SR 1305 (McDougal Road) and US 401.

The North Carolina Department of Transportation and Hoke County are jointly responsible for the proposed thoroughfare improvements. Cooperation between the state and the county is of primary concern if the recommendations outlined above are to be successfully implemented.

It is important to note that the recommended plan is based on anticipated growth within the County as indicated by past trends and future projections. Prior to construction of any of these projects, a more detailed study will be required to reassess development trends and to determine specific locations and design requirements



# Proposed Thoroughfare Plan

## LEGEND

- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector

FIGURE 2

HOKE COUNTY  
NORTH CAROLINA

Prepared by the  
North Carolina Department of Transportation  
Division of Highways-Statewide Planning Branch  
in cooperation with the  
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Federal Highway Administration

February 1996

SCALE



SCALE FOR ENLARGEMENTS

1:50,000 (1" = 0.833 miles)  
1:25,000 (1" = 0.417 miles)  
1:12,500 (1" = 0.208 miles)  
1:6,250 (1" = 0.104 miles)  
1:3,125 (1" = 0.052 miles)

SHEET 1 OF 1

\*\*\*\*\* RAEFORD PLANNING AREA BOUNDARY

NOTE: MAP INCLUDES ONLY STATE MAINTAINED  
OR IMPORTANT NON-STATE MAINTAINED ROADS

177 TO COUNTY ROAD NUMBERS  
100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 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1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 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### CHAPTER 3

## EXISTING AND PROJECTED CONDITIONS

### Land Use

Land use refers to the physical patterns of activities and functions within a city or county. Nearly all traffic problems in a given area can be attributed in some form to the type of land use. For example, a large industrial plant might be the cause of congestion during shift change hours as the workers come and go. However, during the remainder of the day few problems, if any, may occur. The spatial distribution of different types of land use is the predominant determinant of when, where, and why congestion occurs. The attraction between different land uses and their association with travel varies depending on the size, type, intensity, and spatial separation of each.

Hoke County is a rural county of 243,840 acres which houses a significant number of people who work outside the county. The only major development area is the City of Raeford. Other clusters of development include the communities of Rockfish and Dundarrach, an area south of Raeford along NC 211. In addition, three other clusters of development are located east of the City of Raeford in the area of US 401 toward Cumberland County, northwest of Raeford in the area of NC 211 near Moore County, and south of Antioch along NC 211.

Business and residential development are rather scattered. However, major development patterns extend from Raeford south along NC 211, east along US 401, and northwest along NC 211 with heavier concentrations in the northeastern portion of the County. There are a few recreational facilities scattered throughout the County.

Figure 3 depicts the land uses in Hoke County. The major portion of Hoke County is used for agricultural and residential purposes. High Density Residential is concentrated east of Raeford and along the Cumberland County line. A small pocket of high density residential is shown along NC 211 south of Raeford and along US 15-501 in western Hoke County. The only major institutional area is the McCain Hospital site on NC 211 northwest of Raeford. Industrial sites are predominately located north of Raeford and along NC 20 south of Raeford. Commercial developments predominate along US 401 between the Cumberland County line and Raeford and along NC 211 in western and southern Hoke County.

The northeastern portion of Hoke County is expected to have the largest growth in the future. The predominant land use in the area will continue to be residential with commercial uses concentrated along US 401. There is also

expected to be some industrial development in the vicinity of SR 1418 (Wayside Road) and SR 1420 (Townsend Road). In addition, more industrial development is expected in the future along NC 211 at the Moore County line.

### **Population Trends**

Travel is directly related to population and the volume of traffic on any section of roadway is closely related to the size and distribution of the population which it serves. One of the basic steps in planning a transportation system is to estimate future population and its distribution.

As can be seen in Table 1, the 1994 population of Hoke County is estimated at 26,106 persons. By the planning year 2020, the population is estimated at 32,587. This represents a 25 percent increase in population over the next twenty-five years.

A large amount of the population is concentrated in the City of Raeford. The majority of the entire County population is located within a "T"-shaped area represented by four townships. The Raeford Township is in the center of the County at the intersection of US 401, NC 20, and NC 211. McLaughlin Township is located to the east between Raeford and Cumberland County and along US 401. Quewhiffle Township is northwest of Raeford between Raeford and Moore County and along NC 211. Antioch Township is located south of Raeford next to Robeson County and along NC 211.

Future population growth is expected to concentrate around the City of Raeford and adjacent to the Cumberland County line. Thus, a significant portion of the additional 6,481 persons expected by the planning year 2020 will locate in the northeastern quadrant of Hoke county.

### **Economy and Employment**

One of the more important factors to be considered in estimating the future traffic growth of an area is its economic base. The number of employers and employee's income or purchasing power influences how much population can be supported in the area and the number of motor vehicles that will be locally owned and operated. Generally, as the family income increases so does the number of vehicles owned, as well as the number of vehicle trips that will be taken each day by a particular household. An accurate projection of the future economy of the area is essential to estimating future traffic demand.

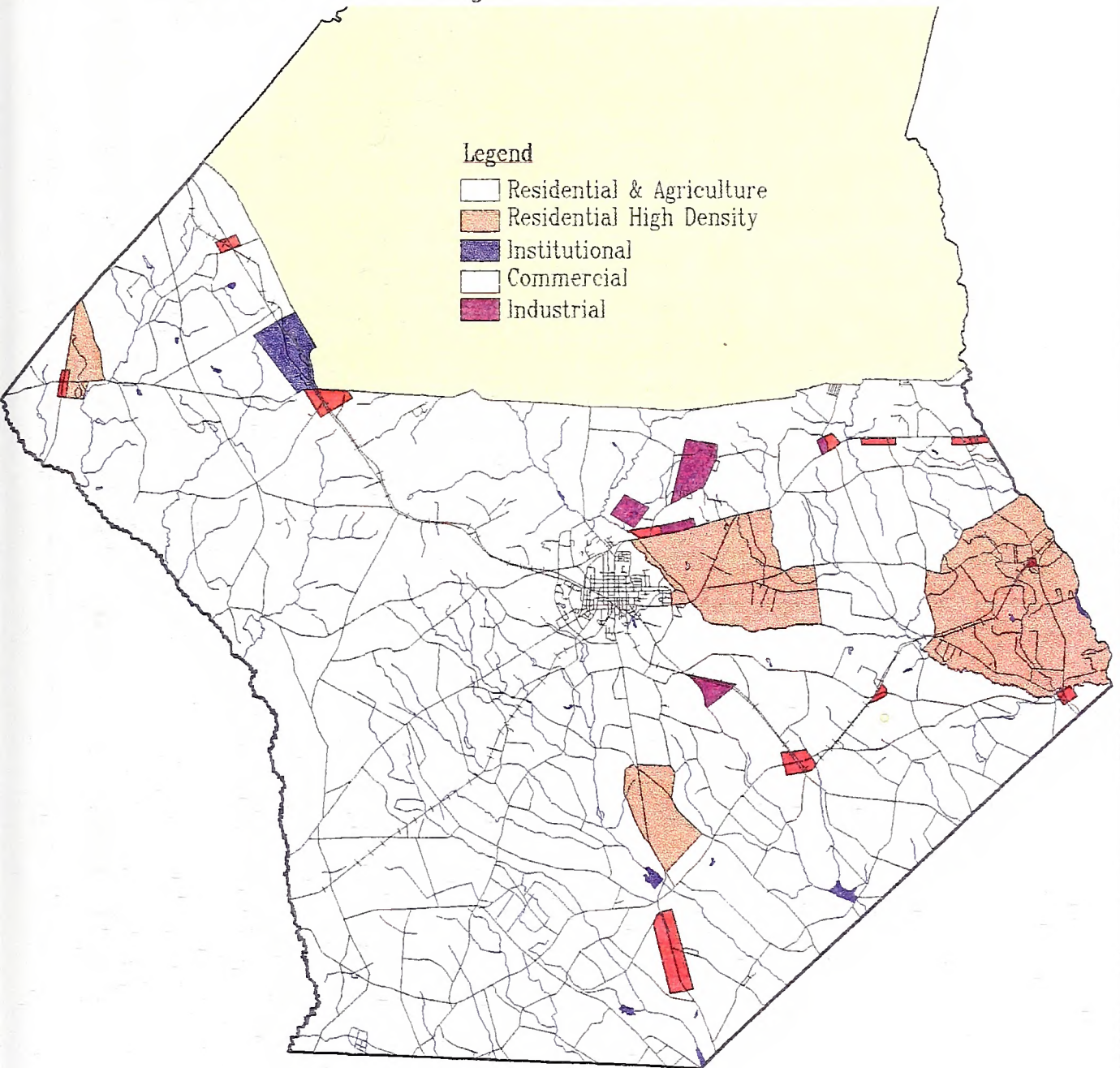
The major factor in the economy of Hoke County is the Fort Bragg Military Reservation. While providing employment opportunities at the base itself, it also creates secondary employment opportunities for services needed by the employees



FIGURE 3

# Current Land Use Plan

## Hoke County, North Carolina



Prepared by: Hoke County Planning – July, 1995



TABLE 1

# Hoke County Population Estimates & Forecasts 1980 - 2010

Years	Estimates	Years	Forecasts
1980	20,215	1995	26,871
1981	20,581	1996	27,448
1982	20,851	1997	27,886
1983	20,955	1998	28,274
1984	21,185	1999	28,518
1985	21,344	2000	28,726
1986	21,744	2001	28,944
1987	22,242	2002	29,163
1988	22,177	2003	29,381
1989	22,407	2004	29,600
1990	22,498	2005	29,818
1991	22,659	2006	30,048
1992	23,380	2007	30,278
1993	24,417	2008	30,507
1994	26,106	2009	30,737
		2010	30,967
		2111	31,101
		2112	31,235
		2113	31,370
		2114	31,504
		2015	31,638
		2116	31,828
		2117	32,018
		2118	32,207
		2119	32,397
		2020	32,587

Source: US Census, State Demographer, Decision Focus

Prepared by: Hoke County Planning - July, 1995

at the Base. Civilian employment of County residents is mostly concentrated in manufacturing. Industry in the County is located mostly in the City of Raeford and consists mainly of textile manufacturing and turkey processing plants. In addition, a large number of employed residents of the County actually work outside the County in Moore, Cumberland, and Robeson Counties. These three counties are approached from Hoke County by major highways running through the more populated townships of the County.

While Hoke County has traditionally been an agricultural producer, the number of farms and acreage in farms has been steadily decreasing. The long range trend is a dramatically decreasing percentage employed in agriculture, a slightly decreasing percentage employed in manufacturing, and a dramatically increasing percentage employed in other areas.

A major factor which will influence economic growth and development in Hoke County over the 25 year planning period is the expansion of the Fayetteville Urbanized Area. Hoke County's location and land availability will make it an attractive alternative for potential homeowners desiring to locate away from the denser developments around this City. Increases in residential development will, in turn, lead to increases in commercial, office, and retail development.

### **Environmental Factors**

In the past several years, environmental considerations associated with highway construction have come to the forefront of the planning process. The legislation that dictates the necessary procedures regarding environmental impacts is the National Environmental Policy Act. Section 102 of this Act requires the execution of an environmental impact statement (EIS) for road projects that have a significant impact on the environment. The EIS would cover the impact of the project on wetlands, water quality, historic properties, wildlife, and public lands. While this report does not cover the environmental concerns in as much detail as an EIS would, preliminary research was done on several of these factors and is included below:

Wetlands are lands where saturation with water is the dominant factor in determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. The single feature that most wetlands share is soil or substrate that is at least periodically saturated with or covered by water. Water creates severe physiological problems for all plants and animals except those that are adapted for life in it or in saturated soil.

Wetlands are crucial ecosystems in our environment. They help regulate and maintain the hydrology of our rivers,



lakes, and streams by slowly storing and releasing flood waters. They help maintain the quality of our water by storing nutrients, reducing sediment loads, and reducing erosion. They are also critical to fish and wildlife populations. Wetlands provide an important habitat for about one third of the plant and animal species that are federally listed as threatened or endangered.

Hoke County, with an elevation ranging from 200 to 450 feet above sea level, is located in both the Sandhills and Coastal Plains physiographic regions of North Carolina. The Sandhills region, encompassing the northern part of the County, is characterized as having hilly terrain with porous, light-colored sandy soils. The Coastal Plains region, which includes southern Hoke County, is a level to mildly undulating plain. Much of the area is poorly drained and swampy. An unexplained natural feature of the Coastal Plain is the "Carolina Bays." These bays are shallow elliptical depressions containing very rich soil.

In addition, information provided by the United States Soil Conservation Service indicates much of Hoke County contains soil associations that have severe development limitations. This would seriously restrict many man-made uses which require well drained land not subject to flooding.

While there is a significant amount of wetlands within Hoke County, none of the proposed road projects will have a major impact on wetlands.

The Threatened and Endangered Species Act of 1973 allows the US Fish and Wildlife Service to impose measures on the Department of Transportation to mitigate the environmental impacts of a road project on endangered plant and animals critical wildlife habitats.

A natural area north of Raeford straddling Rockfish Creek is the habitat of the wild turkey. This bird, although once plentiful throughout the southeastern region of the United States, is now in danger of becoming extinct.

Swampy areas in southern and southwestern Hoke County may contain alligators according to the Corps of Army Engineers. Although their numbers are increasing as a result of government protection, alligators are still listed on the endangered species list.

The Lumber River is a habitat for various warm-water fish. While not endangered, the fish offer recreational opportunities for mankind. Efforts should be made to protect the Lumber River from pollution and destruction.

Other endangered wildlife found in Hoke County includes the Red-Cockaded Woodpecker and various forms of flora.

Recommended projects listed below may impact some of the wildlife discussed above. A detailed field investigation of these corridors is recommended prior to the construction of any of these projects:

- US 401 Widening
- NC 211 Widening
- SR 1406 (Rockfish Road) Widening
- SR 1305 (McDougal Road) Widening

### **Historic Sites**

The location of historic sites in Hoke County was investigated to determine the possible impact of the various projects studied. The federal government has issued guidelines requiring all State Transportation Departments to make special efforts to preserve historic sites. In addition, the State of North Carolina has issued its own guidelines for the preservation of historic sites. These two pieces of legislation are described below:

National Historic Preservation Act - Section 106 of this act requires the Department of Transportation to identify historic properties listed in the National Register of Historic Places and properties eligible to be listed. The DOT must consider the impact of its road projects on these properties and consult with the Federal Advisory Council on Historic Preservation

NC General Statute 121-12(a) - This statute requires the DOT to identify historic properties listed on the National Register, but not necessarily those eligible to be listed. DOT must consider impacts and consult with the North Carolina Historical Commission, but it is not bound by their recommendations.

Preliminary investigations did not reveal any historical sites listed on the National Register of Historic Places or eligible properties which would be affected by the proposed improvements studied in this report. However, it should be noted that there is a potential concern with the NC 211 Bypass proposal. At the intersection of US 401 and SR 1207 (Buie Road), there is a church situated on the northeastern corner. It is called the Bethel Presbyterian Church. While there is no file on this property with the State Historic Office, it appears that the age and structure of the building make it potentially eligible for the National Register of Historic Places. The recommendations for realigning the intersection do not impact the church property. However, it should be noted that this site is in the immediate vicinity of the intersection realignment.



## **Transportation -Existing**

The NCDOT conducts a traffic counting program across the State. Figure 4 shows the 1994 Average Daily Traffic (ADT) volumes on State Roads and some local roads in Hoke County. These counts were then compared to the capacity of the roads. Capacity is defined as the maximum amount of traffic that can be accommodated by a given facility. To obtain a rating of good to poor, six levels of service are used. They are given letter designations from A to F with level-of-service A representing the best operating conditions and LOS F the worst. Appendix A provides a description of each level of service.

The major highway system in Hoke County is US 401. The highest traffic volumes in the County are on this facility, and range from 4,832 vehicles per day in the western part of the County to 11,700 vehicles per day at the Cumberland County line. NC 211 has the next highest traffic volumes, ranging from 3,500 vehicles per day near the Robeson County line to 7,500 vehicles per day at the Moore County line. Other roads which had 1994 average daily traffic counts in excess of 4,000 vehicles per day include SR 1003 (Camden Road), SR 1305 (McDougal Road), SR 1406 (Rockfish Road), SR 1420 (Townsend Road), and Plank Road on the Fort Bragg Military Reservation.

Currently, the only road that is operating at or over capacity is US 401 between Raeford and US 401 Business. Multi-laning this road has already been identified in the NCDOT 1996-2002 Transportation Improvement Program as an identified future need.

## **Transportation - Future**

The Thoroughfare Plan is designed to serve travel to the year 2020. Therefore, traffic projections were developed on the basis of historical traffic growth trends and anticipated future land use patterns. These projections are also shown on Figure 4.

The majority of traffic growth in the future will occur in the northeastern portion of Hoke County. This is an area of intense subdivision development which will continue into the future. The traffic from these developments is mostly oriented to employment activities in Cumberland County and the Fort Bragg Military Reservation. This will result in several of the two-lane roads in the area becoming congested. In particular, SR 1406 (Rockfish Road), SR 1305 (McDougal Road), SR 1418 (Wayside Road), SR 1420 (Townsend Road), and SR 1003 (Camden Road) are projected to be over capacity in the 25 year planning period. On the Fort Bragg Military Reservation, it is projected that Plank Road will be over capacity in the future also.

A secondary area of significant traffic increase will occur along NC 211 in the northwestern portion of the County. This is due to the institutional and industrial developments located in the vicinity of NC 211 in both Hoke and Moore Counties. While NC 211 is projected to be over capacity by the year 2020, widening the road to a multi-lane facility has already been included in the NCDOT 1996-2002 Transportation Improvement Program as an identified future need.

## **Traffic Accidents**

Traffic Accident analysis is a serious and important consideration in the development of a thoroughfare plan. The source of traffic accidents can be broken down into three general categories. The first is the physical environment which includes such things as road condition, weather, road obstructions, and traffic conditions. The second source is associated with the driver. This includes the driver's mental alertness, distractions in the car, ability to handle the vehicle, and reaction time. The third source is associated with the physical attributes of the vehicle itself. This would include such things as the condition of the brakes and tires, vehicle responsiveness, size of the vehicle, and how well the windshield wipers and defroster work. All traffic accidents can be attributed to one or more of these sources; however, the driver is often the primary source.

Both the severity and number of accidents are considered when investigating accident data. The severity of every accident is measured with a series of weighting factors developed by NCDOT's Division of Highways. In terms of these factors, a fatal or incapacitating accident is 4.7 times more severe than one involving only property damage. An accident resulting in minor injury is 11.8 times more severe than one with only property damage.

Traffic accidents are often used as an indicator for locating congestion problems. Traffic accident records can also be reviewed to identify problem locations or deficiencies such as poor design, inadequate signing, ineffective parking, or poor sight distance. Accident patterns developed from analysis of accident data can lead to improvements that will reduce the number of accidents.

Accident data for June 1993 through June 1995 was studied as part of the development of this report. The highest accident count for a single intersection in Hoke County was at the intersection of US 401 and SR 1305 (McDougal Road). In addition, twelve other intersections in Hoke County experienced five to ten accidents during this period, as shown in Table 2 and Figure 5.

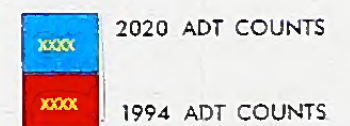


# ADT COUNT MAP



FIGURE 4

## LEGEND



## HOKE COUNTY NORTH CAROLINA

Prepared by the  
North Carolina Department of Transportation  
Division of Highways-Statewide Planning Branch  
in cooperation with the  
U.S. Department of Transportation  
Federal Highway Administration

February 1996



1994 AND 2020 ADT DATA ON NORTH CAROLINA HIGHWAYS (COPYRIGHT 1995)  
POLYTECH PRODUCTIONS

SHEET 1 OF 1

NOTE: MAP INCLUDES ONLY STATE MAINTAINED  
OR IMPORTANT NON-STATE MAINTAINED

KEY TO COUNTY ROAD NUMBERS  
1-99 100-999 1000-9999

\*\*\*\*\* RAEFORD PLANNING AREA BOUNDARY





# High Accident Intersections (June 1993 - June 1995)

FIGURE 5

## LEGEND

- > 10 Accidents
- 5-10 Accidents

HOKE COUNTY  
NORTH CAROLINA

Prepared by the  
North Carolina Department of Transportation  
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Federal Highway Administration

February 1996

SCALE  
0 1 2 3 4 5 6 7 8 9 10  
MILES  
SCALE FOR ENLARGEMENTS  
0 1 2 3 4 5 6 7 8 9 10  
MILES

1:250,000 AND 1:50,000 ON NORTH CAROLINA PLANS  
POLYCONIC PROJECTION

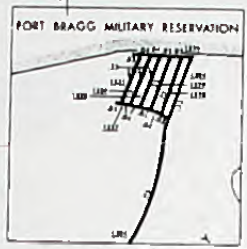
SHEET 1 OF 1

BRIDGE 1 BRIDGE 1 HOKE COUNTY NORTH CAROLINA

\*\*\*\*\* RAEFORD PLANNING AREA BOUNDARY

NOTE: MAP INCLUDES ONLY STATE MAINTAINED  
OR IMPORTANT NON-STATE MAINTAINED ROADS

1:250,000 AND 1:50,000 ON NORTH CAROLINA PLANS  
POLYCONIC PROJECTION







A general review of the accident types at high accident intersections revealed the greatest percentages were related to rear-end collisions and angle collisions which are indicative of a control violation or sight distance problem. All of these intersections also have high traffic volumes on all approaches which increases the probability of conflicts.

**TABLE 2 - SELECTED ACCIDENT INVENTORY**  
(June 1993 - June 1995)

<u>Location</u>	<u>Number of Accidents</u>
US 401 at SR 1305 (McDougal Road)	11
US 401 at SR 1317 (Parker Road)	8
US 401 at SR 1409 (Johnson Mill Road)	6
NC 211 at SR 1001 (Shannon Road)	6
NC 211 at SR 1105 (Old Wire Road)	6
SR 1305 (McDougal Road) at SR 1317	6
SR 1406 (Rockfish Road) at SR 1413	6
SR 1406 (Rockfish Road) at SR 1425	6
US 401 at SR 1408 (Club Pond Road)	5
US 401 at SR 1303 (Scull Road)	5
NC 211 at SR 1219 (Army Road)	5
SR 1003 (Camden Road) at SR 1406	5
SR 1406 (Rockfish Road) at SR 1408	5

### **Existing Bridge Conditions**

Bridges are a vital and unique element of a highway system. First, they represent the highest unit investment of all elements of the system. Second, any inadequacy or deficiency in a bridge reduces the value of the total investment. Third, a bridge presents the greatest opportunity of all potential highway failures for disruption of community welfare. Finally, and most importantly, a bridge represents the greatest opportunity of all highway failures for loss of life. For these reasons, it is imperative that bridges be constructed to the same design standards as the system of which they are a part.

Congress enacted the National Bridge Inspection Program Standards on April 27, 1971, implementing the Federal Highway Act of 1968. These standards require that "all structures designed as bridges located on any of the Federal-Aid Highway Systems be inspected and the safe load carrying capacity computed at regular intervals, not to exceed two years." A sufficiency index number has been calculated for each bridge to establish eligibility and priority for replacement. The bridges with the highest priority are replaced as Federal-Aid fund and State funds become available.

The North Carolina DOT's Bridge Maintenance Unit, with assistance from various consultants, inspects all bridges on the State Highway System. All bridges in Hoke County have been analyzed, rated, and inventoried. The resulting data has been reduced to a more readily usable form as a management tool.

A sufficiency rating was used in the analysis to determine the deficiency of each bridge. The sufficiency rating is a method of evaluating factors that determine whether a bridge is sufficient to remain in service. Factors used include:

- structural adequacy and safety
- serviceability and functional obsolescence
- essentiality for public use
- type of structure
- traffic safety features

The result of this method is a percentage in which 100 percent represents an entirely sufficient bridge and zero percent represents an entirely insufficient or deficient bridge. A sufficiency rating of 50 percent or less qualifies for Federal Bridge Replacement Funds.

Deficient bridges are categorized as either functionally obsolete or structurally deficient. Bridges in the functionally obsolete category have below average ratings in approach roadway alignment, under clearance, deck geometry, waterway adequacy, or structural condition. Structurally deficient bridges have below average ratings in deck superstructure, substructure, overall structural condition, or waterway adequacy. All of the functionally obsolete and structurally deficient bridges in Hoke County are shown in Figure 6. Table 3 shows the functionally obsolete bridges in Hoke County. Table 4 shows the five most structurally deficient bridges in Hoke County.



## Functionally Obsolete and Structurally Deficient Bridges

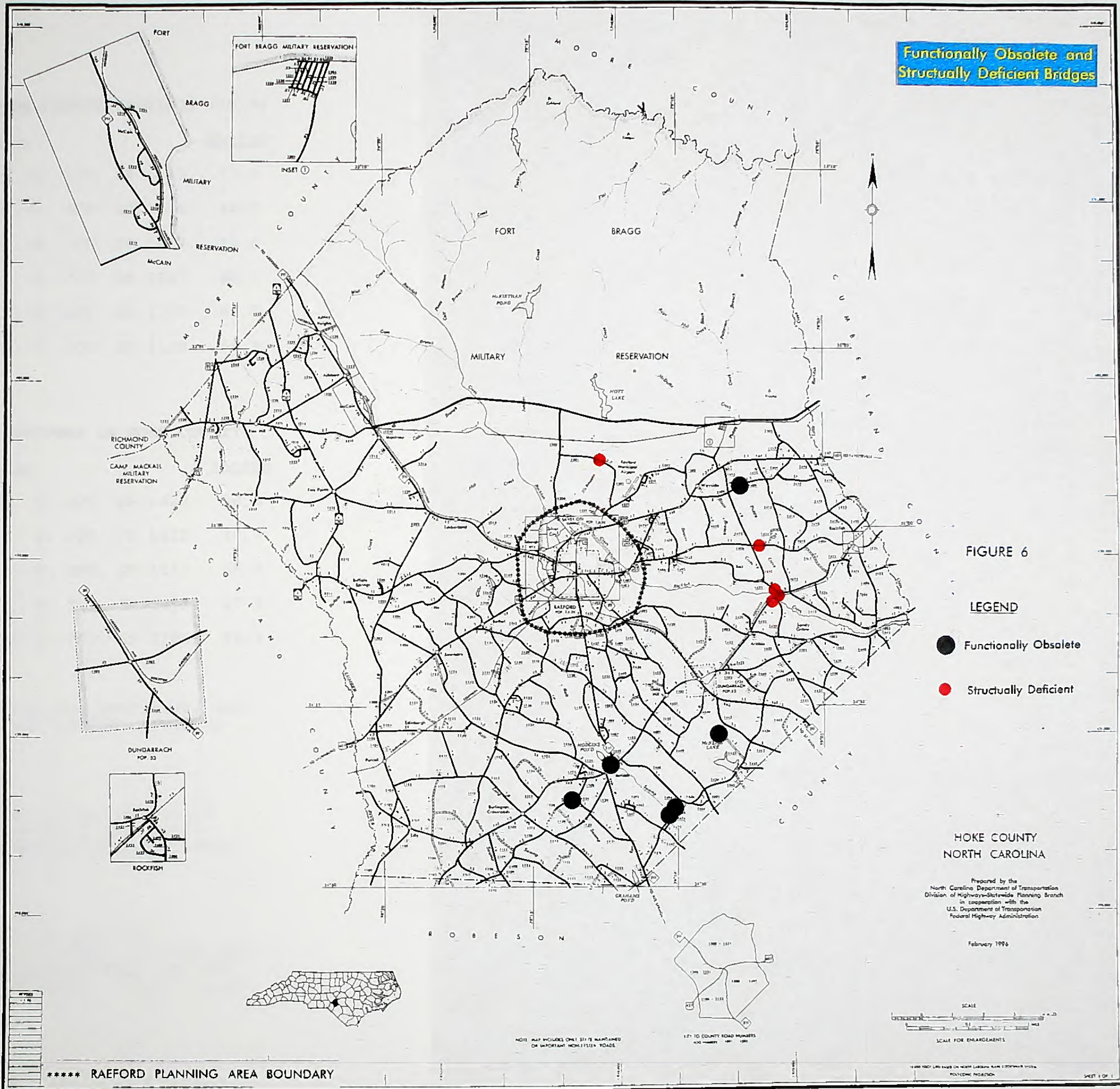


FIGURE 6

### LEGEND

● **Functionally Obsolete**

- Structurally Deficient

HOKE COUNTY  
NORTH CAROLINA

Prepared by the  
North Carolina Department of Transportation  
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in cooperation with the  
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Federal Highway Administration

February 1996

SCALE

SCALE FOR ENLARGEMENTS

RESEARCH ON THE HISTORY OF THE  
RESEARCH ON THE HISTORY OF THE

PRECINCT 4      PRECINCT 2      Hoke County      NORTH CAROLINA

\*\*\*\*\* RAEFORD PLANNING AREA BOUNDARY





**TABLE 3**  
**FUNCTIONALLY OBSOLETE BRIDGES IN HOKE COUNTY (RATINGS <70.0)**

<u>Bridge No.</u>	<u>Facility Carried</u>	<u>Location</u>	<u>Rating</u>
61	SR 1409	0.4 MI. W. JCT. SR 1413	67.8
97	SR 1452	1.1 MI. N. JCT. SR 1436	44.7
37	SR 1436	0.4 MI. N. JCT. SR 1447	46.0
36	SR 1436	0.5 MI. N. JCT. SR 1447	46.0
04	NC 211	0.4 MI. N. JCT. SR 1105	60.7
19	SR 1108	0.3 MI. S. JCT. SR 1129	64.9

**TABLE 4**  
**FOUR MOST STRUCTURALLY DEFICIENT BRIDGES IN HOKE COUNTY**

<u>Bridge No.</u>	<u>Facility Carried</u>	<u>Location</u>	<u>Rating</u>
41	SR 1432	0.2 MI. S. JCT. SR 1422	38.4
42	SR 1432	0.1 MI. S. JCT. SR 1422	40.7
53	SR 1422	0.4 MI. W. JCT. SR 1413	16.9
57	SR 1406	0.2 MI. E. JCT. SR 1412	17.4
63	SR 1301	1.5 MI. E. JCT. SR 1300	25.3

### **Rail Transportation**

Rail transportation is provided by the Laurinburg and Southern Railroad and the Aberdeen and Rockfish Railroad systems.

### **Air Transportation**

Air services are provided by the Raeford Municipal Airport. Although there are no scheduled flights into Raeford, the airport is equipped iwth a lighted 3400 foot paved runway.

### **Bicycle Transportation**

Old US Route 1 is designated as the Carolina Connection, which runs from Maine to Florida. Through Hoke County, this consists of SR 1214 (Gallaway Road), SR 1211 (Walters Road), and SR 1203 (Turnpike Road). These routes are signed as US Bike Route 1.



## CHAPTER 4 THOROUGHFARE PLAN

### Functional Classification Principals

The underlying notion of the thoroughfare plan is to provide a functional system of roads and highways that permit direct, efficient, and safe travel. Different elements in the system are designed to have specific functions and levels of service, thus minimizing the traffic and land service conflict.

In the county plan, elements are either urban or rural. In the case of Hoke County, the urban element is all the area within the planning boundary of Raeford. This area is denoted on the Hoke County Map. While the Hoke County Thoroughfare Plan coordinates with the Raeford Thoroughfare Plan, it does not address transportation planning issues within the planning area of Raeford.

Within the rural system, roads are classified according to the specific function they perform. There are four major systems: principal arterials, minor arterials, major collectors, and minor collectors. A rural highway network functional classification is shown in Figure 7.

Principal Arterials are a connected network of continuous routes that serve corridor movements having substantial statewide or interstate travel characteristics. This will be shown by both the trip lengths and the travel densities. The principal arterial system should serve all urban areas of over 50,000 population and most of those with a population greater than 5,000. The Interstate system constitutes a significant portion of the principal arterial system.

Minor arterials form a network that links cities, larger towns, and other major traffic generators such as large resorts. The minor arterial system generally serves intrastate and intercounty travel and travel corridors with trip lengths and travel densities somewhat less than the principal arterial system.

Major collector roads provide service to the larger towns not directly served by the higher systems and to other traffic generators of equivalent intracounty importance, such as consolidated schools, shipping points, county parks, significant mining and agricultural areas. Major collector roads also link these places to routes of higher classification and serve the more important intracounty travel corridors.

Minor collector roads collect traffic from local roads

and bring all developed areas within a reasonable distance of a major collector road. They also provide service to the remaining smaller communities and link the locally important traffic generators with the rural outskirts.

### **Thoroughfare Planning History**

A Thoroughfare Plan for Hoke County was developed in 1979. This plan is shown in Figure 8 at the end of this chapter. While local officials were involved with the development of the plan, it was never adopted by the Hoke County Commission. However, this plan formed the basis for development of the March, 1996 Thoroughfare Plan, shown on page 7. Several additional projects have been recommended in the 1996 Plan and modifications have been proposed to some of the recommendations in the 1979 Plan. Figure 9 delineates the additions, deletions, and other changes made to the 1979 Thoroughfare Plan. This figure is also located at the end of this chapter.

### **Principal Arterial System**

US 401 - Classified as a principal arterial, this route runs east-west and is a vital corridor through Hoke County for through and statewide travel. It also provides access between the City of Raeford and the Fayetteville Urbanized Area. In recent years this road has become a major commuter route between residential subdivisions in the northeastern part of Hoke County and the Fort Bragg Military Reservation. In the future, this road will continue to serve as the major travel corridor through Hoke County.

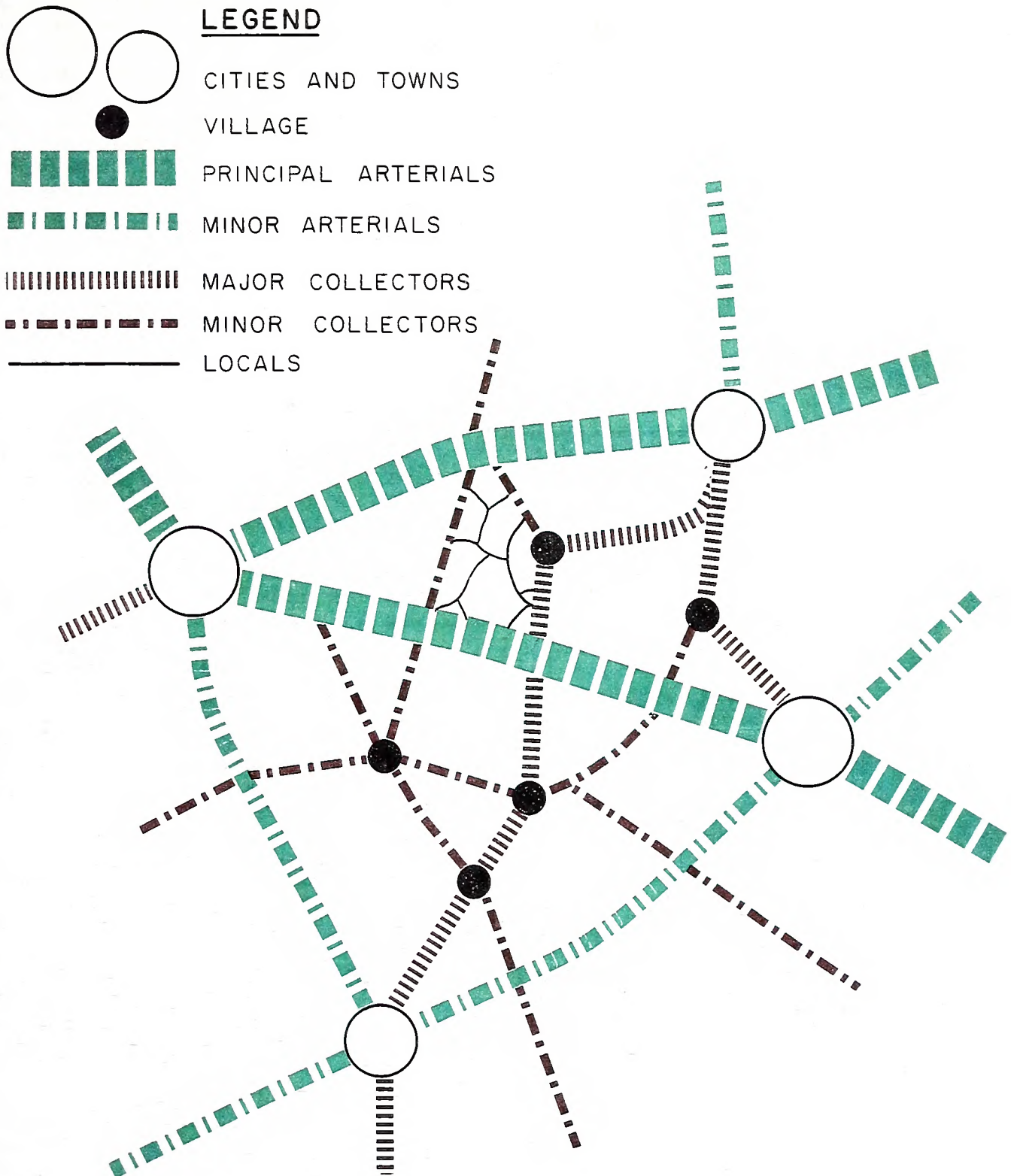
Traffic projections for the planning year (2020) indicate that traffic will approach 18,000 vehicles per day east of the Raeford city limits. Thus, it will be necessary to widen the section of US 401 from the Scotland County line to US 401 Business north of Raeford to a multi-lane facility. This project has been included in the NCDOT 1996-2002 Transportation Improvement Program as an identified future need (R-3333). The remaining multi-lane portion of US 401 into Cumberland County should be adequate to handle future travel demand.

### **Minor Arterial System**

**US 15-501** - This two-lane road traverses the northwestern edge of Hoke County. It provides access to the Town of Laurinburg to the south and Aberdeen and Southern Pines north of Hoke County. It also provides access to the Camp MacKall Military Reservation via SR 1225. The majority of travel on this road is through trips. Traffic volumes on this road are projected at 6,500 vehicles per day in the year 2020, which is well below the capacity of this facility. Therefore, no improvements are recommended.



FIGURE 7



SCHEMATIC ILLUSTRATION  
OF FUNCTIONALLY CLASSIFIED  
RURAL HIGHWAY NETWORK





**NC 20** - This two-lane road runs between the City of Raeford and Robeson County. Specifically, it connects Hoke County with the Town of St. Pauls as well as Interstate 95 in Robeson County. Thus, it carries both local traffic between Raeford and St. Pauls and through travel off of I-95 destined for routes in Hoke County. In addition, it provides a southern connection for Hoke County with the urban area of Fayetteville via I-95. Traffic volumes are not projected to exceed the capacity of NC 20 in the future. However, it should be improved to two 12-foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations.

**NC 211** - This two-lane road runs from the northwestern point of the County to the City of Raeford. It takes a 90 degree turn in Raeford and then runs down the middle of the County to Robeson County. To the north, it provides access to the Moore County Regional Hospital and to the industrial areas in northwestern Hoke County and industrial areas in Moore County. It also leads to the Town of Aberdeen and the City of Southern Pines. To the south, it provides access to more industrial development in Robeson County and to the Town of Red Springs and the City of Lumberton. Thus, it links several important municipalities and activity centers.

While future traffic volumes on NC 211 between Raeford and Robeson County will not exceed the capacity of the road, future traffic volumes will necessitate multi-laning the section of NC 211 from Moore County to Raeford. This project is already listed in the NCDOT 1996-2002 Transportation Improvement Program as an identified future need (R-2592).

**NC 211 Bypass** - Due to the traffic demand and large amount of through truck travel, it is desirable to provide an alternate route around the City of Raeford. This is proposed in the Thoroughfare Plan by utilizing several existing State Routes and a small connector. The NC 211 Bypass is proposed to begin at the intersection of NC 211 and SR 1202 (McMillan Road) west of Raeford. At this point, through traffic can turn down SR 1202. Prior to the intersection of SR 1213 (Gordon Road), a connector would be constructed over to SR 1207 (Buie Road). Traffic would continue along SR 1207, then follow SR 1139 (Chisholm Road) and SR 1138 (Maxwell Road) to NC 211. Traffic on the NC 211 Bypass can also access US 401 at SR 1207 and NC 20 by continuing east of NC 211 along SR 1001 (Shannon Road) and SR 1105 (Old Wire Road)

The amount of travel projected on the Bypass will not exceed the capacity of the two-lane facility. However, upgrading all of the State Routes that are part of the NC 211 Bypass to 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders is recommended for safety considerations. In addition, the traffic flow regulated by the stop signs at the intersections of SR 1116 (Old Maxton Road) and SR 1206 (McRae Road) will need to be reversed so the NC 211 Bypass traffic

is the dominant flow.

Also, improvements will be necessary at the intersections of the NC 211 Bypass with US 401 and NC 211. Currently, the NC 211 Bypass approaches a "Y" type configuration just east of US 401 at SR 1139 (Chisholm Road) and SR 1207 (Buie Road). This necessitates traffic coming to a complete stop. The "Y" configuration should be eliminated in order to develop a single intersection which will allow NC 211 Bypass traffic to proceed unimpeded after going through the US 401 intersection. The intersection of SR 1138 (Maxwell Road) and SR 1001 (Shannon Road) is skewed. Currently SR 1138 intersects NC 211 at approximately a 45 degree angle. Design standards recommend an approach angle between 75 and 90 degrees. Realigning this intersection northward could eliminate the skew and improve the safety of the intersection.

## **Major Collectors**

**Army Road (SR 1219)** - This two lane facility extends east-west between Plank Road on the Fort Bragg Military Reservation and US 15-501 in the western corner of Hoke County. It connects NC 211 and US 15-501 with the Fort Bragg Military Reservation. In addition, it connects with SR 1225 (Chicken Road), which leads to the Camp MacKall Military Reservation. Thus, this road provides a connector facility for local traffic to access arterial routes and major employment centers. Future traffic volumes will not exceed the capacity of Army Road and no improvements are recommended.

**Camden Road (SR 1003)** - This two lane road intersects the major collector of SR 1406 (Rockfish Road) in eastern Hoke County and provides access into Cumberland County. Located along Upchurchs Pond, this road has increased in importance with the recent surge of subdivision development in the area. Because it provides access to the Fayetteville Urbanized Area and the Fort Bragg Military Reservation, it is a major commuter route. In addition, it also provides access to Raeford and recreational facilities via SR 1406 (Rockfish Road). The large amount of local traffic from adjoining subdivisions will cause this road to be over capacity in the future between SR 1406 (Rockfish Road) and the Cumberland County line. Therefore, it should be widened to a multi-lane facility.

**Chicken Road (SR 1225)** - This two lane facility extends westward from US 15-501 into Moore County and provides access to the Camp MacKall Military Reservation. Commuters in Hoke County and surrounding areas can access Camp MacKall by traveling US 15-501 to Chicken Road. Future traffic volumes are not expected to exceed the capacity of this road and no improvements are recommended.

**Davis Road (SR 1441)** - This two lane road continues the north-south corridor of the major collector system in eastern Hoke County when combined with SR 1003 (Camden Road), SR 1418 (Wayside Road), and SR 1305 (McDougal Road). Traffic has increased due to recent subdivision development in the area. However, future traffic volumes are not projected to exceed the capacity of this road. For safety considerations, the road should be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders.

**Duffie Road (SR 1113)** - This two lane road runs from SR 1105 (Old Wire Road) south to Robeson County. It provides access to the Town of Red Springs to the south, which then leads to I-95 and Lumberton. It also provides access to eastern Hoke County via SR 1105 (Old Wire road). Future traffic volumes are not projected to exceed the capacity of this road and no improvements are recommended.



**Hendrix Golf Course Road (SR 1432)** - This two lane road is part of a major collector system that runs north-south across Hoke County. When combined with SR 1105 (Old Wire Road) and SR 1422 (Phillipi Church Road), it connects areas in Robeson County and southern Hoke County with Cumberland County, the Fort Bragg Military Reservation, and the Fayetteville Urbanized Area. At the southern end, it intersects NC 20 and at the northern end it connects to the major collector of SR 1406 (Rockfish Road) and US 401 via a series of minor collectors. While future traffic volumes are not projected to exceed the capacity of this road, it should be widened to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations.

**McDougal Road (SR 1305)** - This two lane road runs north-south between US 401 and Plank Road on the Fort Bragg Military Reservation in eastern Hoke County. It is also part of a north-south major collector system when combined with SR 1418 (Wayside Road), SR 1003 (Camden Road), and SR 1441 (Davis Road). Thus, it provides access to employment activities for the subdivisions located in the area and for commuters traveling US 401 from Raeford and the Fayetteville Urbanized Area. This road will continue to grow in importance as more subdivision development takes place in eastern Hoke County. Future traffic volumes are projected to exceed the capacity of the road and it will need to be widened to a multi-lane facility.

**NC 211** - The segment of NC 211 that is not part of the NC 211 Bypass is designated as a major collector. This is the section between the intersection of NC 211 with SR 1202 (McMillan Road) and the Raeford Planning Boundary as well as the section between the Raeford Planning Boundary and the intersection of NC 211 with SR 1138 (Maxwell Road). This route provides access for traffic on NC 211 destined for office and service activities in Raeford. While traffic volumes are currently heavy on this road, the NC 211 Bypass will divert enough traffic so future traffic volumes will increase only slightly on these sections of NC 211. This will result in the section between the intersection of SR 1202 (McMillan Road) and the Raeford Planning Boundary being close to capacity. Therefore, this section should be multi-laned to accommodate future traffic. This project has already been included in the NCDOT 1996-2002 Transportation Improvement Program as an identified future need (R-2592). The section south of Raeford to the intersection of SR 1138 (Maxwell Road) should be adequate to handle anticipated future traffic as a two-lane facility.

**Old Wire Road (SR 1105)** - This two lane road is part of a major collector system that runs north-south across Hoke County. When combined with SR 1432 (Hendrix Golf Course Road) and SR 1422 (Phillipi Church Road), it connects Robeson County and areas in southern Hoke County with



Cumberland County, Fort Bragg Military Reservation, and the Fayetteville Urbanized Area. It also intersects NC 211 and NC 20, thus providing access to these minor arterials and the activity centers located along them. While future traffic volumes are not projected to exceed the capacity of this road, it should be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations.

**Phillipi Church Road (SR 1422)** - This two lane road is part of a north-south major collector system across eastern Hoke County. When combined with SR 1105 (Old Wire Road) and SR 1432 (Hendrix Golf Course Road), it connects areas in southern Hoke County with routes leading east into Fayetteville, routes leading north into the Fort Bragg Military Reservation, and routes leading west into Raeford. While future traffic volumes are not expected to exceed the capacity of this road, it should be widened to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations.

**Plank Road** - This two lane road runs east-west across the southern boundary of the Fort Bragg Military Reservation. It is on Federally owned land and, therefore, not subject to local or state jurisdictions. However, it is included in the discussion of the Hoke County Thoroughfare Plan because of the large impact it has on travel in the area. Plank road provides access for commuters from Hoke and Cumberland Counties to employment activities at Fort Bragg. SR 1300 (Vass Road) intersects Plank Road and provides access from the City of Raeford. SR 1305 (McDougal Road) intersects Plank Road and provides access from the residential areas in northeast Hoke County. The funneling of all this commuter travel onto Plank Road results in average daily traffic volumes of 9,500 vehicles per day. Thus, this road need to be widened to a multi-lane facility since traffic volumes will only continue to increase in the future.

**Rockfish Road (SR 1406)** - This two lane road runs east-west between the City of Raeford and Cumberland County. Traffic volumes have been steadily increasing on this road due to recent residential development in the area. Since it parallels US 401, it provides an alternate route and tends to be used by commuters working in Raeford, Fayetteville, and the Fort Bragg Military Reservation. This trend will continue into the future and traffic is expected to increase as more subdivisions are built. This will result in the road approaching capacity. Therefore, it is recommended that Rockfish Road be widened to a multi-lane facility in the future.

**Shannon Road (SR 1001)** - The segment of this road between NC 211 and SR 1105 (Old Wire Road) is designated as a major collector because it connects the NC 211 Bypass with NC 20 via SR 1105. This would allow through traffic destined for

NC 20 to continue across Hoke County from NC 211. It also links SR 1105 with the City of Raeford via NC 211. Thus, it serves both through and local traffic. While future traffic volumes are not projected to exceed the capacity of this road, it is recommended that it be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations.

**Townsend Road (SR 1420)** - This two lane road provides a continuation of the east-west major collector system of SR 1406 (Rockfish Road) into Cumberland County. This road also intersects the north-south major collector system of SR 1305 (McDougal Road), SR 1418 (Wayside Road), SR 1003 (Camden Road), and SR 1441 (Davis Road). There is a significant amount of residential development occurring in the area around this road as well as some industrial development. Because of the connectivity this road provides between Fort Bragg, Fayetteville, and Raeford for the residents in the area, it will continue to experience traffic growth in the future. It is anticipated that this growth will exceed the capacity of the road and it is recommended that it be widened to a multi-lane facility.

**US 401 Business** - This two lane facility provides a direct route off of US 401 east of Raeford into the downtown area of Raeford. This allows residents of Hoke County access to the office and service activities in Raeford. While traffic volumes will nearly double on this facility by the year 2020, the road will be able to handle the additional traffic without any improvements.

**Wayside Road (SR 1418)** - This two lane road runs north-south between US 401 and SR 1406 (Rockfish Road) in eastern Hoke County. It is also part of a north-south major collector system when combined with SR 1305 (McDougal Road), SR 1003 (Camden Road), and SR 1441 (Davis Road). Thus, it provides access to employment activities for the subdivisions located in the area and for commuters traveling US 401 from Fayetteville and SR 1406 (Rockfish Road) from Raeford. This road will continue to grow in importance as more subdivision development takes place in eastern Hoke County. Future traffic volumes are projected to exceed the capacity of the road and it will need to be widened to a multi-lane facility.

## **Minor Collectors**

**Addall Road (SR 1230)**- This two lane road intersects the major collector of SR 1225 (Chicken Road), which provides access to the Fort Bragg Military Reservation and the Camp MacKall Military Reservation in Scotland County. In addition, it provides quick access to US 15-501 via SR 1225. Residential growth has been relatively stable in the area. Therefore, it is not anticipated that future traffic volumes will exceed the capacity of the road. However, it is recommended that it be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations.

**Bowen Road (SR 1411)** - This two lane road intersects US 401 in eastern Hoke County. When combined with SR 1412, it provides a continuous route between US 401 and SR 1406 (Rockfish Road), which leads to Raeford. In addition to the increasing amount of subdivision development in the area, a golf course is being developed along SR 1412. This will increase the importance of both SR 1411 and SR 1412 for commuter and recreational travel. Future traffic volumes are not expected to exceed the capacity of this road. However, due to the nature of development between US 401 and SR 1409, there will be a high amount of turning movements. Therefore, this section should be widened to three lanes to include a center turn lane to facilitate turning movements and improve safety.

**Brown Road (SR 1302)** - This two lane road provides access between Raeford and the Raeford Municipal Airport. Thus, it is important for travel between this activity center and destinations in Hoke County. It also provides access to US 401 via SR 1303 (scull Road) and to the Fort Bragg Military Reservation via SR 1300 (Vass Road. Future traffic volumes are not expected to exceed the capacity of this road and no improvements are recommended.

**Camden Road (SR 1003)** - The segment of Camden Road from NC 20 to SR 1441 (Davis Road) is designated as a minor collector. Located along Rockfish Creek, this road has increased in importance with the recent surge of subdivision development in the area. Because it provides access to the Fayetteville Urbanized Area and the Fort Bragg Military Reservation, it is a major commuter route. In addition, it also provides access to Raeford via NC 20 and intersesects the north-south major collector system of SR 1105, 1432, 1422, and 1420. While future traffic volumes are not expected to exceed the capacity of this road, it is recommended that it be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations.

**Club Pond Road (SR 1408)** - This two lane road connects US 401 with the major collector of SR 1406 (Rockfish Road). Thus,



the residents in this area have easy access to both Raeford and the Fayetteville Urbanized Area. In addition, the Fort Bragg Military Reservation is quickly reached via US 401. While this road will continue to be an important link for residents of the area in the future, traffic volumes are not projected to exceed the capacity of the road and no improvements are recommended.

**Everitt Road (SR 1440)** - This two lane road intersects SR 1003 and leads into Robeson County where the Town of Red Springs can be accessed via NC 71. Extensive subdivision development in the area has increased the importance of this road as a commuter route to Raeford, the Fayetteville Urbanized Area, and the Fort Bragg Military Reservation via the north-south major collector system of SR 1003, 1406, 1418, and 1305. Future traffic volumes are not expected to exceed the capacity of this road and no improvements are recommended.

**Gallaway Road (SR 1214)** - This two lane road parallels NC 211 in northwestern Hoke County. It is also designated as the Carolina Connection bike route, which is a portion of US Bike Route 1 which runs from Maine to Florida. This road provides residents of the area connections to Raeford via NC 211 and the Fort Bragg Military Reservation via SR 1219 (Army Road). It also leads up to the Moore County line where the Moore County Regional Hospital and industrial sites are located. While future traffic volumes are not expected to exceed the capacity of this road, it is recommended that it be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations.

**Johnson Mill Road (SR 1409)** - This two lane road parallels US 401 in northeastern Hoke County, providing easy access to the Fayetteville Urbanized Area and the Fort Bragg Military Reservation. It also intersects the minor collectors of SR 1410 (Townsend Road), SR 1412 (Parker Church Road), and SR 1413 (Monroe Road). These are especially important because they lead to areas of recreational activities and areas of substantial subdivision development. In addition, this road will increase in importance as more commercial and office development takes place along US 401. However, future traffic volumes are not expected to exceed the capacity of the road and no improvements are recommended.

**Jordan Road (SR 1104)** - This two lane road in southwestern Hoke County intersects the major collector of SR 1105 (Old Wire Road), which is part of the north-south major collector system into Cumberland County. It also crosses into Scotland County and intersects US 401 in Wagram, thus giving residents of this part of Hoke County access to that principal arterial. Future traffic volumes are not projected to exceed the capacity of this road and no improvements are recommended.



**Monroe Road (SR 1413)** - This two lane road runs north-south in eastern Hoke County from US 401 all the way to SR 1003 (Camden Road), which leads to the Fayetteville Urbanized Area. It intersects the major collectors of SR 1406 (Rockfish Road) and SR 1422 (Phillipi Church Road). In addition to the increasing amount of subdivision development along this road, a golf course is under construction. Thus, this road will continue to increase in importance with the growing population in the area and recreational activities available. It will also continue to be a major commuter route since it intersects US 401 and SR 1406. Future traffic volumes are not projected to exceed the capacity of this road. However, due to the nature of development between US 401 and SR 1406, there will be a high amount of turning movements. Therefore, this section should be widened to three lanes with a center turn lane to facilitate turning movements and improve traffic flow.

**Old Maxton Road (SR 1116)** - This two lane road runs north-south from Raeford through the middle of Hoke County parallel to NC 211. It intersects the major collector of SR 1105 (Old Wire Road), which is part of the north-south major collector system into Cumberland County. Thus, it provides access for local residents to Raeford and the Fayetteville Urbanized Area. When the NC 211 Bypass is designated, it will intersect it at SR 1139 (Maxwell Road). This will further increase the importance of this road as a collector to that minor arterial facility. Future traffic volumes are not expected to exceed the capacity of this road and no improvements are recommended.

**Parker Church Road (SR 1412)** - This two lane road connects with SR 1411 (Bowen Road) to provide a continuous route from US 401 to SR 1422 (Phillipi Church Road) in eastern Hoke County. It also intersects the major collector of SR 1406 (Rockfish Road), which leads to Raeford. In addition to the increasing amount of subdivision development in the area, a golf course is being developed along SR 1412. This will increase the importance of both SR 1411 and SR 1412 for commuter and recreational travel. Future traffic volumes are not expected to exceed the capacity of this road. However, due to the nature of development between SR 1409 and SR 1406, there will be a high amount of turning movements. Therefore, this section should be widened to three lanes to include a center turn lane to facilitate turning movements and improve traffic flow.

**Phillipi Church Road (SR 1422)** - The segment of SR 1422 between SR 1406 and SR 1432 is designated as a minor collector. Located along Rockfish Creek in eastern Hoke County, this two lane road has increased in importance with the recent surge in subdivision development in the area. It provides access to Raeford via SR 1406 and to the Fayetteville Urbanized Area via SR 1422 and SR 1420. While

future traffic volumes are not projected to exceed the capacity of the road, it is recommended that it be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations

**Ritter Road (SR 1424)** - This two lane road intersects the major collector of SR 1406 (Rockfish Road). It provides access for the subdivisions in the area to Raeford via SR 1406 and to the Fort Bragg Military Reservation via SR 1418 and SR 1305. It also crosses the Cumberland County line, thus providing access to the Fayetteville Urbanized Area. While future traffic volumes are not projected to exceed the capacity of the road, it is recommended that it be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations

**Scully Road (SR 1303)** - This two lane road connects SR 1302 (Brown Road) with US 401. This provides an important connection for traffic destined for the Raeford Municipal Airport along SR 1302. It also provides access south to the recreational areas via SR 1409 and SR 1412. Future traffic volumes are not expected to exceed the capacity of this road and no improvements are recommended.

**Shannon Road (SR 1001)** - The segment of this road between SR 1105 (Old Wire Road) and the County line is designated as a minor collector. It connects the southeastern portion of Hoke County with the north-south major collector system of SR 1105, 1432, 1422, and 1420, which leads to the Fayetteville Urbanized Area. It also connects with the NC 211 Bypass via the major collector portion of SR 1001 and with NC 20 via SR 1105. In addition, it provides access to Raeford via the major collector portion of SR 1001 and NC 211. While future traffic volumes are not projected to exceed the capacity of the road, it is recommended that it be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations

**Townsend Road (SR 1410)** - This two lane road connects SR 1409 (Johnson Mill Road) with the major collector of SR 1406 (Rockfish Road), which leads to Raeford to the west and the Fayetteville Urbanized Area to the east. SR 1409 connects with US 401, also providing access to the Fayetteville Urbanized Area. Thus, residents along Townsend Road have easy connections with major employment and activity centers. While this road will continue to be an important link, future traffic volumes are not expected to exceed the capacity of the road and no improvements are recommended.

**Turnpike Road (SR 1203)** - This two lane road runs east-west from Scotland County into Raeford. It is also designated as the Carolina Connection bike route, which is a portion of US Bike Route 1 which runs from Maine to Florida. This route is mainly used for local traffic destined for Raeford. It

also intersects US 15-501 in Scotland County. When the NC 211 Bypass is designated, Turnpike Road will intersect it at SR 1207 (Buie Road), thus providing residents easy access to destinations along NC 211. Future traffic volumes are not projected to exceed the capacity of this road and no improvements are recommended.

**Vass Road (SR 1300)** - This two lane road connects Raeford with Plank Road on the Fort Bragg Military Reservation. Thus, it is a very important commuter route. It also provides access to the Raeford Municipal Airport via SR 1301 (Johnson Road). This is significant for air travel to both Raeford and the Fort Bragg Military Reservation. While future traffic volumes are not projected to exceed the capacity of the road, it is recommended that it be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations

**Walters Road (SR 1211)** - This two lane road connects the minor collectors of SR 1214 (Gallaway Road) with SR 1203 (Turnpike Road) in northwestern Hoke County. It is also designated as the Carolina Connection bike route, which is a portion of US Bike Route 1 which runs from Maine to Florida. This road provides residents of the area connections to Raeford via SR 1214 and NC 211 and to the Fort Bragg Military Reservation via SR 1214 and SR 1219 (Army Road). It also is part of a north-south minor collector system that leads up to the Moore County line where the Moore County Regional Hospital and industrial sites are located. While future traffic volumes are not projected to exceed the capacity of the road, it is recommended that it be improved to two 12 foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders for safety considerations











# Changes From the 1979 Thoroughfare Plan



FIGURE 9

## LEGEND

- Changed Designation
- Minor Arterial
- Major Collector
- Minor Collector

## HOKE COUNTY NORTH CAROLINA

Prepared by the  
North Carolina Department of Transportation  
Division of Highways-Statewide Planning Branch  
in cooperation with the  
U.S. Department of Transportation  
Federal Highway Administration

February 1996

SCALE  
1" = 1 MILE  
SCALE FOR ENLARGEMENTS  
1" = 0.5 MILE

NOTE: MAP INCLUDES ONLY STATE MAINTAINED  
OR IMPORTANT NON-SYSTEM ROADS

SEE TO-COUNTY ROAD NUMBERS  
AND MAPS 1001 - 1005

1:50,000 SCALE BASED ON NORTH CAROLINA PLAT 1000000 (1974)  
HOKE COUNTY, NORTH CAROLINA

SHEET 1 OF 1

\*\*\*\*\* RAEFORD PLANNING AREA BOUNDARY







## CHAPTER 5 CONSTRUCTION PRIORITIES AND IMPLEMENTATION

An evaluation of the North Carolina highway program from administrative, historical, and financial perspectives indicates the following objectives are of greatest importance:

- To improve the North Carolina arterial system to reduce travel costs and improve travel service between urban centers.
- To improve the level of service and safety of all roads and highways on the State system in a cost effective manner.
- To encourage economic development.
- To preserve the natural and human environment.
- To allocate funds to projects in a fair and equitable manner.

(1) User benefits, (2) cost, (3) probability that a project will stimulate economic development, (4) quantification of environmental impacts, and (5) relationship of a project to the State Intrastate System provide a basis for evaluating how well projects meet these objectives.

Thoroughfare improvement needs identified and evaluated in the Hoke County Thoroughfare Plan are:

1. Widen US 401 to a multi-lane facility from the Scotland County line to US 401 Business north of Raeford. (R-3333)
2. Widen NC 211 to a multi-lane facility between the Moore County line and the City of Raeford. (R-2592)
3. Designate a NC 211 Bypass around Raeford utilizing State Routes 1202 (McMillan Road), SR 1207 (Buie Road), SR 1139 (Chisholm Road), and SR 1138 (Maxwell Road).
4. Widen SR 1406 (Rockfish Road) to a multi-lane facility.
5. Widen SR 1305 (McDougal Road) to a multi-lane facility.
6. Widen SR 1420 (Townsend Road) to a multi-lane facility
7. Widen SR 1003 (Camden Road) from SR 1406 to the

Cumberland County line to a multi-lane facility.

8. Widen SR 1418 (Wayside Road) to a multi-lane facility.
9. Widen Plank Road on the Fort Bragg Military Reservation to a multi-lane facility.
10. Widen SR 1411 (Bowen Road), SR 1412 (Parker Church Road), and SR 1413 (Monroe Road) to three-lane facilities with a center turn lane.
11. Widen NC 20 to provide 12-foot (3.6 m) lanes, paved shoulders, and turn lanes at major intersections from the Robeson County line to the Raeford Urban Planning Boundary.
12. Widen the following to provide 12-foot (3.6 m) lanes with paved shoulders: SR 1001 (Shannon Road), SR 1003 (Camden Road), SR 1105 (Old Wire Road), SR 1124 (Gibson Road), SR 1138 (Maxwell Road), SR 1139 (Chisholm Road), SR 1202 (McMillan Road), SR 1207 (Buie Road), SR 1211 (Walters Road), SR 1214 (Gallaway Road), SR 1230 (Addall Road), SR 1300 (Vass Road), SR 1412 (Parker Church Road), SR 1413 (Monroe Road), SR 1422 (Phillipi Church Road), SR 1424 (Ritter Road), SR 1432 (Hendrix Golf Course Road), and SR 1441 (Davis Road).
13. Intersection improvements at the following locations: SR 1214 (Gallaway Road) and SR 1211 (Walters Road), SR 1207 (Buie Road) and SR 1139 (Chisholm Road), SR 1138 (Maxwell Road) and SR 1001 (Shannon Road), SR 1406 (Rockfish Road) and SR 1422 (Phillipi Church Road), and SR 1305 (McDougal Road) and US 401.
1. **Widen US 401 to a multi-lane facility from the Scotland County line to US 401 Business north of Raeford (R-3333)**  
- The purpose of this project is to improve the traffic carrying capacity and the safety of US 401. It has been included in the NCDOT 1996-2002 Transportation Improvement Program as an identified future need (R-3333). The project route is generally rural in nature with scattered farms and undeveloped woodlands. However, the section from US 401 south of Raeford to US 401 Business north of Raeford is commercially developed. Except in the area around US 401 Business south of Raeford, the existing roadway is 2-lane with 24-foot (7.3 m) wide pavement and 10-foot (3.0 m) wide soil shoulders. In the area of US 401 Business south of Raeford, the roadway is a 3-lane shoulder section with 36-foot (11.0 m) wide pavement and 10-foot (3.0 m) soil shoulders. Existing right-of-way varies between 75 feet (22.9 m) and

150 feet (45.7 m).

The 1994 Average Daily Traffic Volume (ADT) on US 401 varies from approximately 4832 vehicles per day (vpd) to approximately 9700 vehicles per day. For the design year (2020), the estimated traffic volumes on US 401 will range from approximately 11,500 vehicles per day to approximately 23,000 vehicles per day. These future volumes greatly exceed the capacity of a two-lane road and necessitate the widening to a multi-lane facility. The recommended cross-section for this project is a 4-lane, divided, shoulder section with 12-foot (3.6 m) wide travel lanes, a 46 foot (14.0 m) wide median, 2 foot (0.6 m) wide inside paved shoulders, and 8 foot (2.3 m) wide outside shoulders which include 2 feet (0.6 m) paved. A 250 foot (76.2 m) wide right-of-way is recommended.

Estimated Cost - \$21,132,848

2. **Widen NC 211 to a multi-lane facility from the Moore County line to Raeford** - This road is currently a 2-lane, 24 foot paved facility with variable 8 to 10 foot unpaved shoulders. Left turn lanes are provided at SR 1219 (Army Road). The 1994 Average Daily Traffic on this facility is approximately 7,500 vehicles per day. Because of anticipated growth associated with Moore County Regional Hospital and the industrial areas in northwestern Hoke County, traffic volumes are projected to exceed 16,000 vehicles per day by the year 2020. This is well beyond the capacity of a two-lane facility and it will need to be widened in the future. It is already programmed in the NCDOT 1996-2002 Transportation Improvement Program as an identified future need (R-2592)

While the proposed NC 211 Bypass will divert some of the traffic off of this facility, NC 211 will still be operating over capacity in the future. In addition, the NC 211 Bypass does not begin until SR 1202 (McMillan Road) near Raeford. Therefore, both the multi-laning of NC 211 and the NC 211 Bypass are needed to serve future travel. The recommended cross-section is a 4-lane divided section, with two 24 foot pavements divided by a minimum 46 foot grass median with 12 foot shoulders (4 feet of which are paved) on an estimated 220 feet of right-of-way. Between the loop road (SR 1318) intersections, sufficient right-of-way was purchased along NC 211 to allow for the proposed 4-lane divided section to be built in the future.

Estimated Cost - \$20,000,000

3. **NC 211 Bypass** - This bypass around Raeford would utilize several existing State Routes and a small connector. The NC 211 Bypass is proposed to begin at the intersection of



NC 211 and SR 1202 (McMillan Road) west of Raeford. At this point, through traffic can turn down SR 1202. Prior to the intersection of SR 1213 (Gordon Road), a connector would be constructed over to SR 1207 (Buie Road). Traffic would continue along SR 1207, then follow SR 1139 (Chisholm Road) and SR 1138 (Maxwell Road) to NC 211. Traffic on the NC 211 Bypass can also access US 401 at SR 1207 and NC 20 by continuing east of NC 211 along SR 1001 (Shannon Road) and SR 1105 (Old Wire Road).

The amount of travel projected on the Bypass will not exceed the capacity of the two-lane facilities. However, upgrading all of the State Routes that are part of the NC 211 Bypass to two 12 foot (3.6 m) lanes with a minimum of 2 foot (0.6 m) paved shoulders is recommended for safety considerations. This will require a minimum of 70 feet (21 m) of right-of-way. In addition, the traffic flow regulated by the stop signs at the intersections of SR 1116 (Old Maxton Road) and SR 1206 (McRae Road) will need to be reversed so the NC 211 Bypass traffic is the dominant flow.

Also, improvements will be necessary at the intersections of the NC 211 Bypass with US 401 and NC 211. Currently, the NC 211 Bypass approaches a "Y" type configuration just east of US 401 at SR 1139 (Chisholm Road) and SR 1207 (Buie Road). This necessitates traffic coming to a complete stop. The "Y" configuration should be eliminated in order to develop a single intersection which will allow NC 211 Bypass traffic to proceed unimpeded after going through the US 401 intersection. The intersection of SR 1138 (Maxwell Road) and SR 1001 (Shannon Road) is skewed. Currently SR 1138 intersects NC 211 at approximately a 45 degree angle. Design standards recommend an approach angle between 75 and 90 degrees. Realigning this intersection northward could eliminate the skew and improve the safety of the intersection.

Estimated Cost - \$7,000,000

4. **Widen SR 1406 (Rockfish Road) to a multi-lane facility** - This two lane road runs east-west between the City of Raeford and Cumberland County. Traffic volumes have been steadily increasing on this road due to recent residential development in the surrounding area. This trend will continue in the future as more subdivision developments are built in the area. In addition, this road parallels US 401 and provides an alternate route for commuters between the Fayetteville Urbanized Area and the Fort Bragg Military Reservation.

The recommended cross-section is a four lane divided facility with a grass median of at least 24 feet



(7.2 m). This cross-section will require 94 feet (28.2 m) of right-of-way. Median cross-overs can be provided at the intersections of SR 1422 (Phillippi Church Road), SR 1410 (Townsend Road), SR 1412 (Parker Church Road), SR 1413 (Monroe Road), SR 1420 ((Townsend Road), SR 1424 (Ritter Road), and SR 1003 (Camden Road)

Estimated Cost - \$12,000,000

5. **Widen SR 1305 (McDougal Road) to a multi-lane facility** - This two lane facility runs north-south between US 401 and Plank Road on the Fort Bragg Military Reservation. It is also part of a north-south major collector system when combined with SR 1418 (Wayside Road), SR 1003 (Camden Road), and SR 1441 (Davis Road). It serves an important purpose by linking employment activities to the subdivisions located in the area and for commuters traveling US 401 from Raeford and the Fayetteville Urbanized Area.

As growth in residential development takes place in the surrounding area, traffic volumes are projected to exceed the capacity of this two lane road. Therefore, it is recommended that it be widened to a four lane divided facility with a grass median of at least 24 feet (7.2 m). This cross-section will require 94 feet (28.2 m) of right-of-way.

In addition, the intersection of SR 1305 (McDougal Road) with SR 1418 (Wayside Road) at US 401 should be improved. It is currently an offset intersection and has the highest accident rate of any intersection in the County outside of the Raeford planning area. It is recommended that SR 1305 (McDougal Road) be realigned approximately 1000 feet (300 m) to the east to eliminate the offset intersection.

Estimated Cost - \$24,000,000

6. **Widen SR 1420 (Townsend Road) to a multi-lane facility** - This two lane road provides a continuation of the east-west major collector system of SR 1406 (Rockfish Road) into Cumberland County. This road also intersects the north-south major collector system of SR 1305 (McDougal Road), SR 1418 (Wayside Road), SR 1003 (Camden Road), and SR 1441 (Davis Road). Thus, this facility is an important link to the Fort Bragg Military Reservation as well as some industrial and residential developments in the area. Because of the connectivity this road provides, future traffic volumes are projected to exceed the capacity of this two lane road. Therefore, it is recommended that it be widened to a four lane divided facility with a grass median of at least 24 feet (7.2 m). This cross-section will require 94 feet (28.2 m) of

right-of-way.

Estimated Cost - \$520,000

7. **Widen SR 1003 (Camden Road) to a multi-lane facility between SR 1406 (Rockfish Road) and the Cumberland County line** - This two lane road intersects the major collector of SR 1406 (Rockfish Road) in eastern Hoke County and provides access into Cumberland County. This road has increased in importance with the recent surge of subdivision development in the area. Because it provides access to the Fayetteville Urbanized Area and the Fort Bragg Military Reservation, it is an important commuter route. In addition, it also provides access to Raeford and recreational opportunities via SR 1406. The large amount of local traffic from adjoining subdivisions will cause this road to be over capacity in the future. Therefore, it is recommended that it be widened to a four lane divided facility with a grass median of at least 24 feet (7.2 m). This cross-section will require 94 feet (28.2 m) of right-of-way.

Estimated Cost - \$1,530,000

8. **Widen SR 1418 (Wayside Road) to a multi-lane facility** - This two lane road runs north-south between US 401 and 1406 (Rockfish Road) in eastern Hoke County. It is also part of a north-south major collector system when combined with SR 1305 (McDougal Road), SR 1003 (Camden Road), and SR 1441 (Davis Road). Thus, it provides access to employment activities for the subdivisions located in the area and for commuters traveling US 401 from Fayetteville and SR 1406 (Rockfish Road) from Raeford. This road will continue to grow in importance as more subdivision development takes place in eastern Hoke County and future traffic volumes are projected to exceed the capacity of the road. Therefore, it is recommended that it be widened to a four lane divided facility with a grass median of at least 24 feet (7.2 m). This cross-section will require 94 feet (28.2 m) of right-of-way.

Estimated Cost - \$3,800,000

9. **Widen Plank Road on the Fort Bragg Military Reservation to a multi-lane facility** - This two lane road runs east-west across the southern boundary of the Fort Bragg Military Reservation. It provides access for commuters from Hoke and Cumberland Counties to employment activities on the Base. SR 1300 (Vass Road) intersects Plank Road and provides direct access from the City of Raeford. SR 1305 (McDougal Road) intersects Plank Road and provides access from residential areas in northeast Hoke County. Traffic volumes on Plank Road at the

Cumberland County line are currently at 9,500 vehicles per day. Thus, this road needs to be widened to a four lane divided facility with a grass median of at least 24 feet (7.2 m). This cross-section will require 94 feet (28.2 m) of right-of-way.

Estimated Cost - \$16,500,000

10. **Widen SR 1411 (Bowen Road), SR 1412 (Parker Church Road), and SR 1413 (Monroe Road) to three lane facilities with center turn lanes** -These three state routes run north-south between US 401 and SR 1406 (Rockfish Road). This is an area of intense subdivision development which will continue to increase in the future. Since these roads connect US 401 with SR 1406, they will serve an important function for residents of the area to access all of the employment, recreational, and institutional uses along US 401 and SR 1406. While future traffic volumes will not exceed the capacity of these state routes, the heavy turning movements associated with all of the local travel dictate the advisability of widening the roads to include a third, center turn lane. This cross-section would include three 12 foot (3.6 m) lanes with 2.5 feet (0.75 m) for curb and gutter. The entire cross-section would require 70 feet (21 m) of right-of-way.

Estimated Cost:

SR 1411/1412 - \$2,200,000  
SR 1413 - \$2,540,000

11. **Widen NC 20 to provide two 12-foot (3.6 m) lanes, paved shoulders, and turn lanes at major intersections from the Robeson County line to the Raeford Urban Planning Boundary** - This two lane road connects Hoke County with the Town of St. Pauls as well as I-95 in Robeson County. In addition, it provides a southern connection for Hoke County with the urban area of Fayetteville via I-95 and SR 1105 (Old Wire Road) and SR 1003 (Camden Road). While future traffic volumes will not exceed the capacity of the road, as a minor arterial on the thoroughfare plan, it should be upgraded to engineering design standards of 12 foot (3.6 m) lanes.
12. **Widen the following to provide 12-foot (3.6 m) lanes with 2 foot (0.6 m) paved shoulders:** SR 1001 (Shannon Road), SR 1003 (Camden Road), SR 1105 (Old Wire Road), SR 1124 (Gibson Road), SR 1138 (Maxwell Road), SR 1139 (Chisholm Road), SR 1202 (McMillan Road), SR 1207 (Buie Road), SR 1211 (Walters Road), SR 1214 (Gallaway Road), SR 1230 (Addall Road), SR 1300 (Vass Road) SR 1412 (Parker Church Road), SR 1413 (Monroe Road), SR 1422 (Phillipi Church Road), SR 1424 (Ritter Road), SR 1432 (Hendrix Golf Course Road), and SR 1441 (Davis Road).



### **13. Intersection improvements at the following locations:**

SR 1214 (Galloway Road) and SR 1211 (Walters Road) - This intersection is a five-legged intersection. This type of configuration creates confusion and causes safety problems. It is recommended that SR 1211 be realigned 1000 feet (300 m) eastward to create two distinct intersections instead of one five-legged intersection.

SR 1207 (Buie Road) and SR 1139 (Chisholm Road) - See the previous discussion of this intersection under the NC 211 Bypass Improvement (Recommendation number 3)

SR 1138 (Maxwell Road) and SR 1001 (Shannon Road) - See the previous discussion of this intersection under the NC 211 Bypass Improvement (Recommendation number 3)

SR 1406 (Rockfish Road) and SR 1422 (Phillipi Church Road) - This is actually a five-legged intersection where SR 1486 also intersects SR 1406. Since the intersection of SR 1406 and SR 1408 (Club Pond Road) is only approximately 1,000 feet (300 m) east of this intersection, it is recommended that the intersection of SR 1422 be combined with the intersection of SR 1408 to create a single intersection. The remaining 1,000 feet (300 m) of SR 1422 west of this intersection could be accessed via SR 1422 rather than off of SR 1406.

SR 1305 (McDougal Road) and US 401 - See the previous discussion of this intersection under the widening of SR 1305 (McDougal Road) Improvement (Recommendation number 5)

### **CONSTRUCTION PRIORITIES**

Construction priorities vary depending on what criteria are considered and what weight is attached to the various criteria. Most people would agree that improvements to the major thoroughfare system and major traffic routes would be more important than minor thoroughfares where traffic volumes are lower. To be in the North Carolina Transportation Improvement Program, a project must show favorable benefits relative to cost and should not be prohibitively disruptive to the environment. The potential cost estimate of the major Hoke County projects with respect to user benefits, and the probabilities that economic development will be stimulated and environmental impacts will be minimized are given in Table 5.

Reduced road user cost should result from any roadway improvement, from a simple widening to the construction of a new roadway to relieve congested or unsafe conditions. Comparisons of the existing and the proposed facilities have



been made in terms of vehicle operating costs, travel time costs, and accident costs. These user benefits are computed as total dollar savings over the 25 year design period using data such as project length, base year and design year traffic volumes, traffic speed, type of facility, and volume/capacity ratio.

The impact of a project on economic development potential is shown as the probability that it will stimulate the economic development of an area by providing access to developable land and reducing transportation costs. It is a subjective estimate based on the knowledge of the proposed project, local development characteristics, and land development potential. The probability is rated on a scale from 0 (representing no development potential) to 1.00

**TABLE 5**

**BENEFITS EVALUATION FOR MAJOR PROJECTS**

Project	Benefits (mill.)	Cost (mill.)	Length (km)	Benefits/ km	Economic Development.	Environ. impact
US 401	85.5	22.1	13.6	6.3	0.70	+0.7/-0.2
NC 211	80.7	20.0	19.5	4.1	0.63	+0.6/-0.2
NC 211 Bypass	43.9	7.0	15.4	2.9	0.35	+0.1/-0.5
SR 1406	46.2	12.0	16.5	2.8	0.35	+0.1/-0.3
SR 1305	7.0	2.4	2.5	2.8	0.28	+0.1/-0.2
SR 1420	1.7	0.5	0.6	2.8	0.20	+0.1/-0.1
SR 1003	4.6	1.5	2.0	2.3	0.15	+0.1/-0.3
SR 1418	7.9	3.8	5.1	1.5	0.18	+0.1/-0.2

Reduced road user cost should result from any roadway improvement, from a simple widening to the construction of a new roadway to relieve congested or unsafe conditions. Comparisons of the existing and the proposed facilities have been made in terms of vehicle operating costs, travel time costs, and accident costs. These user benefits are computed as total dollar savings over the 25 year design period using data such as project length, base year and design year traffic volumes, traffic speed, type of facility, and volume/capacity ratio.

The impact of a project on economic development

potential is shown as the probability that it will stimulate the economic development of an area by providing access to developable land and reducing transportation costs. It is a subjective estimate based on the knowledge of the proposed project, local development characteristics, and land development potential. The probability is rated on a scale from 0 (representing no development potential) to 1.00 (representing excellent development potential).

The environmental impact analysis considers the effect of a project on the physical, social/cultural, and economic environment. Environmental factors usually considered can be divided into three major categories--physical, social and/or cultural, and economic environmental considerations (see Table 6). Thirteen environmental factors considered in these evaluations are: (1) air quality, (2) water resources, (3) soils and geology, (4) wildlife, (5) vegetation, (6) neighborhoods, (7) noise, (8) educational facilities, (9) churches, (10) park and recreational facilities, (11) historic sites and landmarks, (12) public health and safety, and (13) aesthetics. The summation of both positive and negative impact probabilities with respect to these factors provides a measure of the relative environmental impact of a project.

The environmental impact analysis also uses a probability rating from 0 to 1.00. A negative value is assigned to the probability to indicate a negative impact. The summation of both positive and negative impact probabilities with respect to these factors provides a measure of the relative environmental impacts of a project. Table 7 shows the probability scale used in the analysis. This table can be used as a guideline for interpreting the "Economic Development" and "Environmental Impact" values given in Table 5.

**TABLE 7**  
**PROBABILITY ESTIMATION GUIDE**

Subjective Evaluation	Impact Probability
Excellent - Very Substantial	1.00
Very Good - Substantial	0.75
Good- Considerable	0.50
Fair - Some	0.25
Poor - None	0.00

**TABLE 6: ENVIRONMENTAL CONSIDERATIONS**

<b>Physical Soils and Geology</b>	<b>Social/Cultural Environment</b>	<b>Economic Environment</b>
Air Quality	Housing	Businesses
Water Resources	Neighborhoods	Employment
Soils and Geology	Noise	Economic Development
Wildlife	Education Facilities	Public Utilities
Vegetation	Churches	Transportation Costs
	Parks and Recreational Facilities	Capital Costs
	Public Health and Safety	Operation and Maintenance Costs
	National Defense	
	Aesthetics	

## **IMPLEMENTATION**

Once the thoroughfare plan has been developed and adopted, implementation is one of the most important aspects of the thoroughfare plan. Unless implementation is an integral part of this process, the effort and expense associated with developing the plan is lost. A more detailed discussion of implementation is contained in the report titled Generalized Appendices For The Thoroughfare Plan Reports by NCDOT. However, a brief review of several tools available for use by the County to assist in the implementation of the thoroughfare plan are described below.

### **State-County Adoption of the Thoroughfare Plan**

Hoke County and the North Carolina Department of Transportation (NCDOT) have mutually adopted the thoroughfare plan shown in Figure 2. This mutually adopted plan can serve as a guide for the NCDOT in the development of the road and highway system for the County. The approval of this plan by the County also enables standard road regulations and land use controls to be used effectively in the implementation of this plan.

### **Subdivision Controls**

Subdivision regulations require every subdivider to submit to the County planning commission a plan of any proposed subdivision. It also requires that the subdivisions be constructed to meet certain standards. This process can be used to require the subdivision streets to conform to the thoroughfare plan and to reserve or protect necessary right-of-way for planned roads and highways that are to become a part of the thoroughfare plan. The construction of subdivision streets to adequate standards reduces maintenance costs and simplifies the transfer of streets to the State Highway System. A detailed subdivision ordinance is contained in the report titled Generalized Appendices For The Thoroughfare Plan Reports by NCDOT.

### **Land Use Controls**

Land use regulations are an important tool in that they regulate future land development and minimize undesirable development along roads and highways. The land use regulatory system can improve highway safety by requiring sufficient setbacks to provide for adequate sight distances and by requiring off-street parking.

### **Development Reviews**

Driveway access to a State-maintained street or highway is reviewed by the District Engineer's Office and by the Traffic Engineering Branch of the NCDOT. In addition, any



development expected to generate large volumes of traffic (e.g. shopping centers, fast food restaurants, or large industries) may be comprehensively studied by staff from the Traffic Engineering Branch, Planning and Environmental Branch, and/or Roadway Design Unit of NCDOT. If done at an early stage, it is often possible to significantly improve the development's accessibility while preserving the integrity of the thoroughfare plan.

## **FUNDING SOURCES**

### **Capital Improvements Program**

A local capital improvements program makes it easier to build a planned thoroughfare system. A capital improvement program consists of two lists of projects. The first is a list of highway projects that are designated as a municipal responsibility and are to be implemented with municipal funds. The second is a list of local projects designated as State responsibility to be included in the Transportation Improvement Program. These funds are generally not applicable for county thoroughfare plans.

### **Transportation Improvement Program**

North Carolina's Transportation Improvement Program (TIP) is a document which lists all major construction projects the Department of Transportation plans for the next seven years. Similar to local Capital Improvement Program projects, TIP projects are matched with projected funding sources. Each year when the TIP is updated, completed projects are removed, programmed projects are advanced, and new projects are added.

During annual TIP public hearings, municipalities request projects to be included in the TIP. A Board of Transportation member reviews all of the project requests in a particular area of the State. Based on the technical feasibility, need, and available funding, the board member decides which projects will be included in the TIP. In addition to highway construction and widening, TIP funds are also available for other projects such as bridge replacement, highway safety, public transit, railroad crossings, and bicycle facilities.

### **Industrial Access Funds**

If an industry wishes to develop property that does not have access to a state maintained highway and certain economic conditions are met, then funds may be made available for construction of an access road.

## **Small Urban Funds**

Small Urban funds are annual discretionary funds made to municipalities with qualifying projects. The maximum amount is \$150,000 per year per project. A town may have multiple projects. Requests for Small Urban Fund assistance should be directed to the appropriate Board of Transportation member and Division Engineer.

## **The North Carolina Highway Trust Fund Law**

The Highway Trust Fund Law was established in 1989 as a 13.5 year plan with four major goals for North Carolina's roadway network. These goals are:

1. To complete the remaining 1,716 miles (2,768 km) of four lane construction on the 3,600 mile (5,806 km) North Carolina Intrastate System
2. To construct a multilane connector in Asheville and portions of multilane loops in Charlotte, Durham, Greensboro, Raleigh, Wilmington, and Winston-Salem.
3. To supplement the secondary roads appropriation in order to pave, by 1999, 10,000 miles (16,129 km) of unpaved secondary roads carrying 50 or more vehicles per day, and all other unpaved secondary roads by 2006.
4. To supplement the Powell Bill Fund

The portion of this bill which will most benefit Hoke County is the paving of most, if not all, of the unpaved roads on the State maintained system by the end of the planning horizon. For more information on the Highway Trust Fund Law, contact the Program Development Branch of the North Carolina Department of Transportation.

## **Implementation Recommendations**

Table 8 provides a break down of the projects recommended in the Hoke County Thoroughfare Plan and the corresponding method that would best suit the implementation of the given project.

TABLE 8

## FUNDING SOURCES AND RECOMMENDED METHODS OF IMPLEMENTATION

Projects	Funding Source				Method of Implementation		
	Local Funds	TIP	Indust Access	Small Urban	Tho. Plan	Subd. Ordinc.	Zoning Develop. Reviews
US 401		X			X		X
NC 211		X			X		X
NC 211 BYP					X	X	X
SR 1406					X	X	X
SR 1305					X	X	X
SR 1420					X	X	X
SR 1003					X	X	X
SR 1418					X	X	X
SR 1411					X	X	X
SR 1412					X	X	X
SR 1413					X	X	X
NC 20					X	X	X





# Proposed Improvements

## LEGEND






-  New Road
-  Widen to Multilane Facility
-  Widen to 3 Lanes
-  Widen to 22'-24' Lanes
-  Intersection Realignment

FIGURE 10

HOKE COUNTY  
NORTH CAROLINA

Prepared by the  
North Carolina Department of Transportation  
Division of Highways-Statewide Planning Branch  
in cooperation with the  
U.S. Department of Transportation  
Federal Highway Administration

SCALE  
0 1 2 3 4 5 6 7 8 9 10  
MILES  
SCALE FOR ENLARGEMENT

KEY TO COUNTY ROAD NUMBERS  
1980 NUMBER 1981 - 1991

NOTE: MAP INCLUDES ONLY STATE MAINTAINED  
OR IMPORTANT NON-STATE ROADS

MADE 1991 City of Hoke On North Carolina Maps (Copyright 1991)  
POLYCONIC PROJECTION

SHEET 1 OF 1

\*\*\*\*\* RAEFORD PLANNING AREA BOUNDARY







**APPENDIX A**

**LEVEL OF SERVICE DEFINITIONS**



## APPENDIX A

### LEVEL OF SERVICE DEFINITIONS

A good indication of the adequacy of the existing major street system is a comparison of the traffic volumes with the ability of the streets to move traffic freely at a desirable speed. The amount of traffic that can travel on a street is controlled principally by the spacing of major traffic control devices along the road. Thus, the ability of a street to move traffic can be increased by restricting parking and turning movements, using proper sign and signal devices, and by the application of other traffic engineering techniques.

Vehicle capacity represents the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic, and control conditions. Person capacity represents the maximum number of people that can pass a given point during a specified period under prevailing conditions. Person capacity is commonly used in evaluating public transit services, high-occupancy vehicle lanes, or pedestrian facilities. The following vehicle capacity definitions are taken from the Highway Capacity Manual, Special Report 209, Third Edition, 1994, p. 1-4. Six levels of service have been selected to identify the conditions existing under various speed and volume conditions on a highway or street. The six levels of service, as shown in Figure 11, are:

1. Level-of-service A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.
2. Level-of-service B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A, because the presence of others in the traffic stream begins to affect individual behavior.
3. Level-of-service C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and driver and pedestrian frustration is generally high. Operations at this level are usually unstable,



because small increases in flow or minor perturbations within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.

4. Level-of-service D represents high-density, but stable flow. Speed and freedom to maneuver are severely restricted. The driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.
5. Level-of-service E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience
6. Level-of-service F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion. Level-of-service F is used to describe the operating conditions within the queue, as well as the point of the breakdown. In many cases operating conditions of vehicles or pedestrians discharged from the queue may be quite good. It is the point at which arrival flow exceeds discharge flow which causes the queue to form. Level-of-service F is an appropriate designation for such points.

The recommended improvements and overall design of the Thoroughfare Plan were based on achieving a minimum of LOS D on existing facilities, and LOS C on new facilities. LOS D is considered the "**practical capacity**" of a facility, or that point at which the public begins to express dissatisfaction.

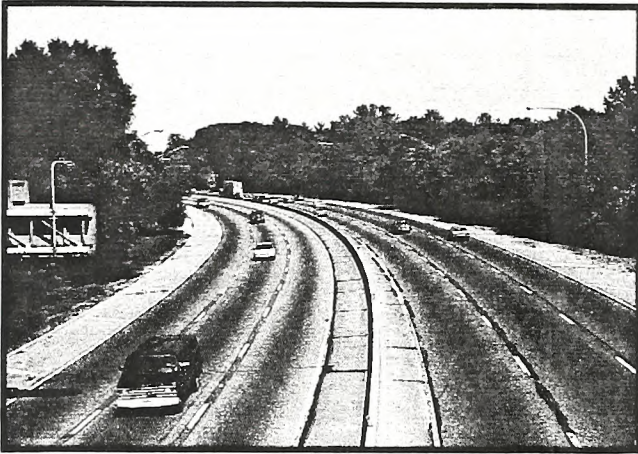
It should be noted, however, that the above levels-of-service are general definitions. For each type of facility, levels-of-service are defined on the basis of one or more operational parameters that best describe the operating quality for the facility type. The parameters selected to define levels-of-service for each facility type are called measures of effectiveness and represent available measures that best describe the operation on the subject facility. The following table presents the primary measures of effectiveness used to define

level-of-service for each facility type. Effectiveness and level-of-service criteria are not defined for bicycles. The treatment of bicycles is limited to their impact on other vehicular flow at critical points in the street and highway system.

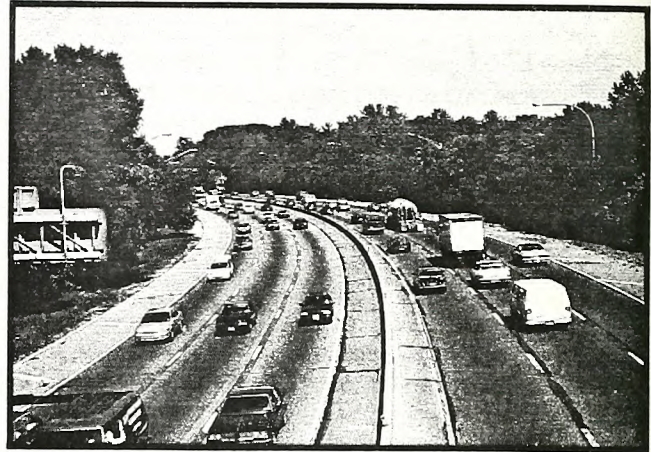
TYPE OF FACILITY	MEASURE OF EFFECTIVENESS
Freeways	
Basic freeway segments	Density (cars/mile/lane)
Weaving areas	Avg. travel speed (mph)
Ramp junctions	Flow rates (pcph)
Multilane highways	Density (cars/mile/lane)
	Free flow speed (mph)
Two-lane highways	Time delay (percent)
Signalized intersections	Avg. stopped delay (sec/veh)
Unsignalized intersections	Avg. total delay (sec/veh)
Arterials	Avg. travel speed (mph)
Transit	Load factor (pers/seat, veh/hr, people/hr)
Pedestrians	Space (sq ft/ped)

\*Highway Capacity Manual, Special Report 209, Third Edition, 1994, p.1-5

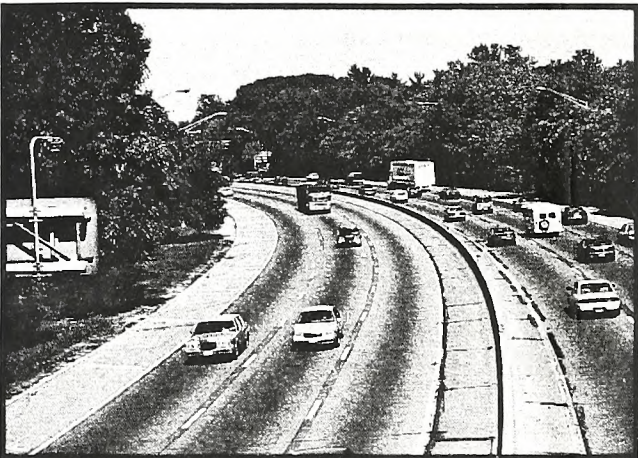




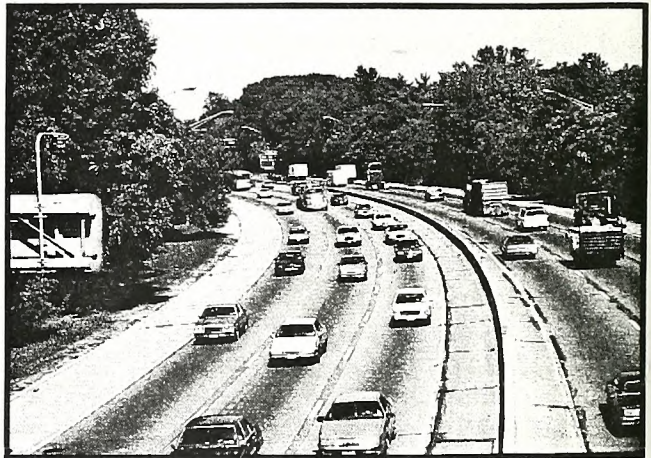
LOS A.



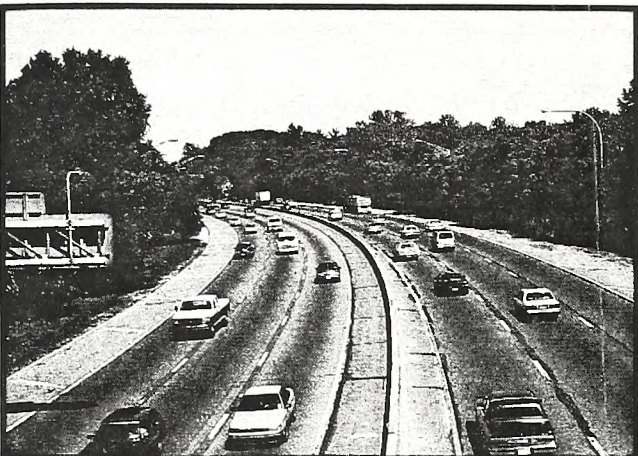
LOS D.



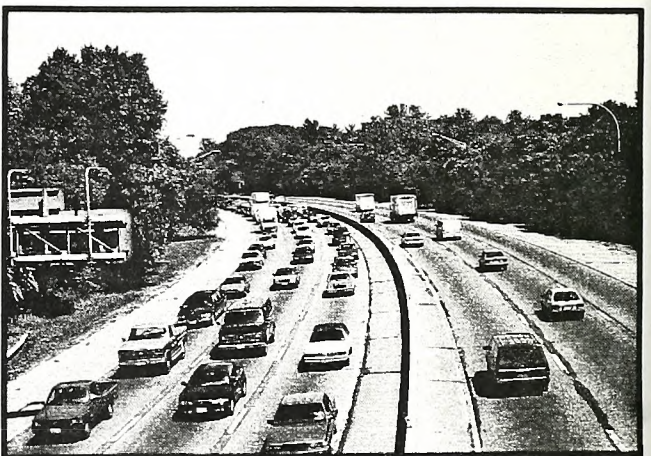
LOS B.



LOS E.



LOS C.



LOS F.

# LEVELS OF SERVICE



**APPENDIX B**  
**TYPICAL THOROUGHFARE CROSS SECTIONS**



## APPENDIX B

### TYPICAL THOROUGHFARE CROSS SECTIONS

Cross section requirements for thoroughfares vary according to the desired capacity and level of service to be provided. Universal standards in the design of thoroughfares are not practical. Each street section must be individually analyzed and its cross section requirements determined on the basis of amount and type of projected traffic, existing capacity, desired level of service, and available right-of-way.

Typical cross section recommendations are shown in Figure 12. These cross sections are typical for facilities on new location and where right-of-way constraints are not critical. For widening projects and urban projects with limited right-of-way, special cross sections should be developed that meet the needs of the project.

Recommended typical cross sections for thoroughfares were derived on the basis of projected traffic, existing capacities, desirable levels of service, and available right-of-way.

On all existing and proposed major thoroughfares delineated on a thoroughfare plan, adequate right-of-way should be protected or acquired for the ultimate cross sections. Recommendations for "ultimate" cross sections are provided for (1) thoroughfares which may require widening after the current planning period; (2) thoroughfares which are borderline adequate and accelerated traffic growth could render them deficient; and (3) thoroughfares where an urban curb and gutter cross section may be locally desirable because of urban development or redevelopment.

Recommended design standards relating to maximum and minimum grades, minimum sight distances, maximum degree of curve and related super elevation, and other considerations for thoroughfares are given in Chapter 4. This Chapter gives definitions and design standards recommended for inclusion in subdivision regulations.

**Cross sections "A" and "L"** are typical for controlled access freeways. The 14 m (46 ft) grassed median is the minimum desirable median width, but there could be some variation from this depending upon design considerations. Right-of-way requirements would typically vary upward from 70 m (228 ft) depending upon cut and fill requirements.



**Cross section "B"**, seven lane curb and gutter, should not be used for new projects. When the conditions warrant six lanes, cross section "D" should be recommended. Cross section "B" should be used only in special situations such as when widening from a five lane section and when right-of-way is limited. Even in these situations, consideration should be given to converting the center turn lane to a median so that cross section "D" is the final cross section.

**Cross section "C"**, five lane curb and gutter, is typical for major thoroughfares where frequent left turns are anticipated as a result of abutting development or frequent street intersections.

**Cross sections "D", "E", and "M"** are used on major thoroughfares where left turns and intersecting streets are not as frequent. Left turns would be restricted to a few selected intersections. The 4.9 m (16 ft) median is the minimum recommended for an urban boulevard type cross section. In most instances, monolithic construction should be utilized due to greater cost effectiveness, ease and speed of placement, and reduced future maintenance requirements. In special cases, grassed or landscaped medians may be used in urban areas. However, these types of medians result in greatly increased maintenance costs and an increased danger to maintenance personnel. Non-monolithic medians should only be recommended when the above concerns are addressed.

**Cross section "F"** is recommended for urban boulevards or parkways to enhance the urban environment and to improve the compatibility of major thoroughfares with residential areas. A minimum median width of 7.3 m (24 ft) is recommended with 9.1 m (30 ft) being desirable.

**Typical cross section "G"** is recommended for major thoroughfares where projected travel indicates a need for four travel lanes but traffic is not excessively high, left turning movements are light, and right-of-way is restricted. An additional left turn lane would probably be required at major intersections. This cross section should be used only if the above criteria is met. If right-of-way is not restricted, future strip development could take place and the inner lanes could become de facto left turn lanes.

In urban environments, thoroughfares which are proposed to function as one-way traffic carriers would typically require **cross section "H"**. **Cross sections "I" and "J"** are usually recommended for urban minor thoroughfares since these facilities usually serve both land service and traffic service functions. **Cross section "I"** would be used on those minor thoroughfares where parking on both sides is needed as a result of more intense development.

**Cross section "K"** is used in rural areas or for staged construction of a wider multi-lane cross section. On some thoroughfares, projected traffic volumes may indicate that two travel lanes will adequately serve travel for a considerable period of time. For areas that are growing and future widening will be necessary, the full right-of-way of 30 m (100 ft) should be required. In some instances, local ordinances may not allow the full 30 m (100 ft). In those cases, 21 m (70 ft) should be preserved with the understanding that the full 30 m (100 ft) will be preserved by use of building setbacks and future street line ordinances.

The urban curb and gutter cross sections all illustrate the sidewalk adjacent to the curb with a buffer or utility strip between the sidewalk and the minimum right-of-way line. This permits adequate setback for utility poles. If it is desired to move the sidewalk farther away from the street to provide additional separation for pedestrians or for aesthetic reasons, additional right-of-way must be provided to insure adequate setback for utility poles.

The right-of-ways shown for the typical cross sections are the minimum rights-of-way required to contain the street, sidewalks, utilities, and drainage facilities. Cut and fill requirements may require either additional right-of-way or construction easements. Obtaining construction easements is becoming the more common practice for urban thoroughfare construction.

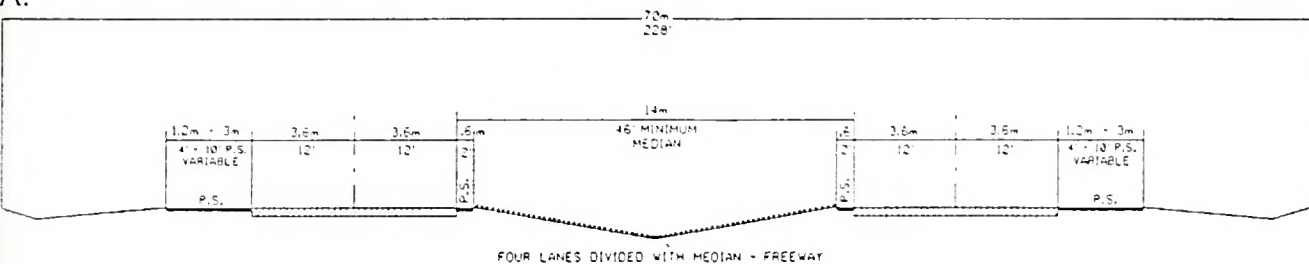
If there is sufficient bicycle travel along the thoroughfare to justify a bicycle lane or bikeway, additional right-of-way may be required to contain the bicycle facilities. The North Carolina Bicycle Facilities Planning and Design Guidelines should be consulted for design standards for bicycle facilities. **Cross sections N, O, and P** are typically used to accommodate bicycle travel.



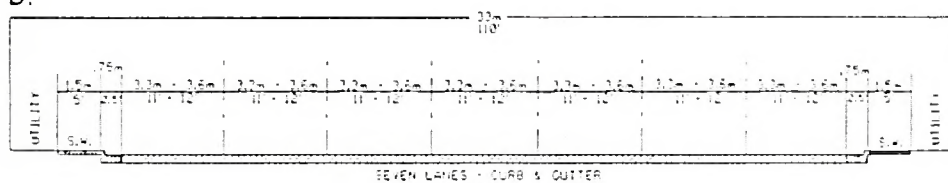


# TYPICAL THOROUGHFARE CROSS SECTIONS

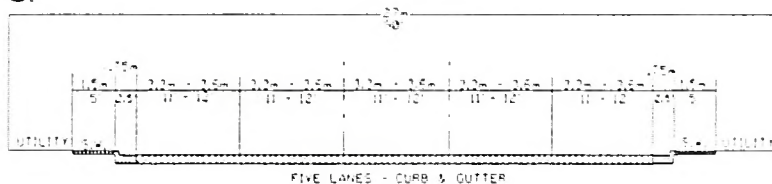
A.



B.



C.



D.

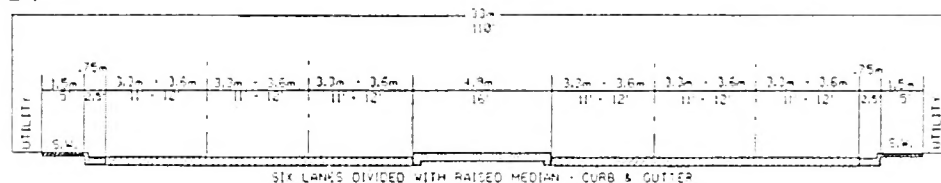
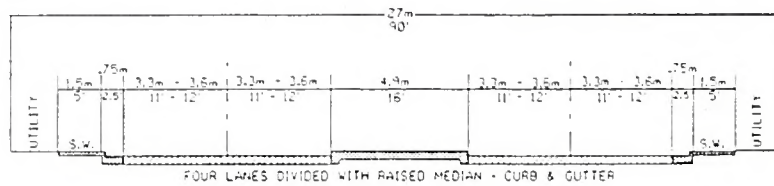


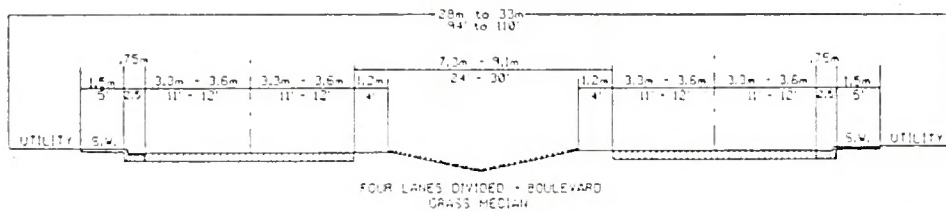
FIGURE 12

# TYPICAL THOROUGHFARE CROSS SECTIONS

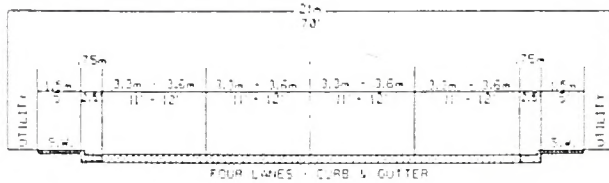
E.



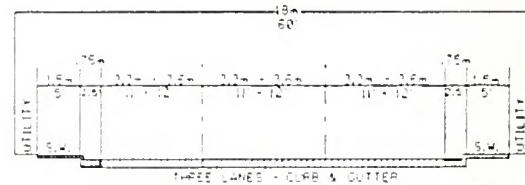
F.



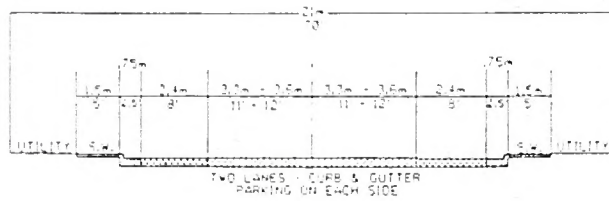
G.



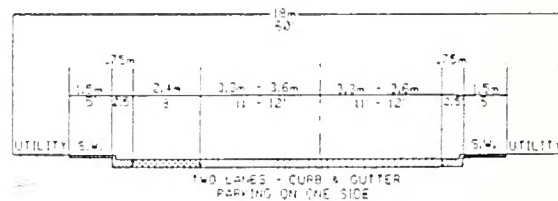
H.



I.



J.



K.

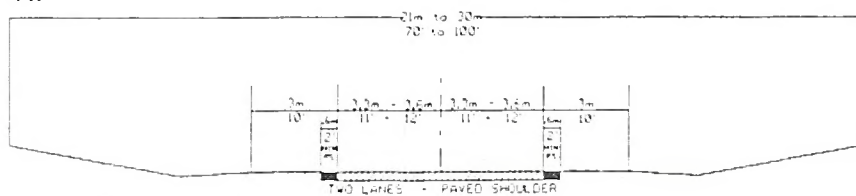
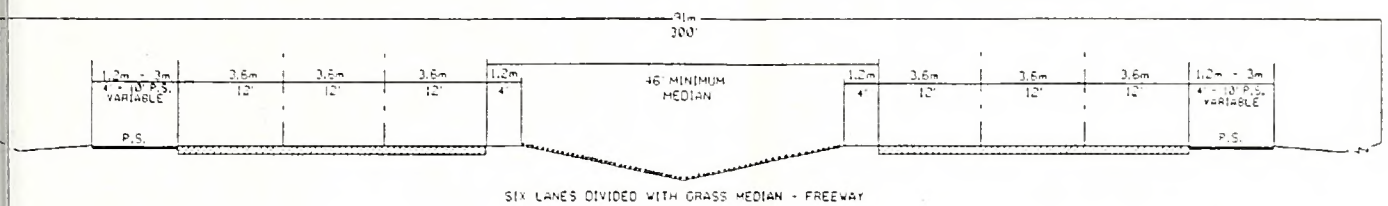
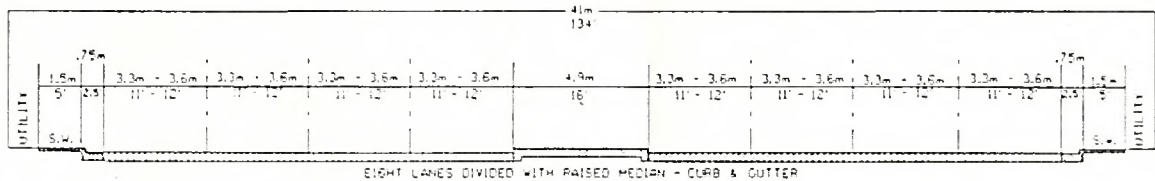


FIGURE 12

# TYPICAL THOROUGHFARE CROSS SECTIONS

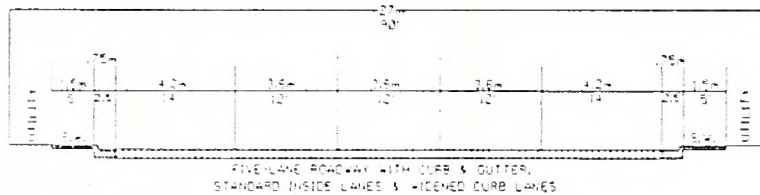


M.

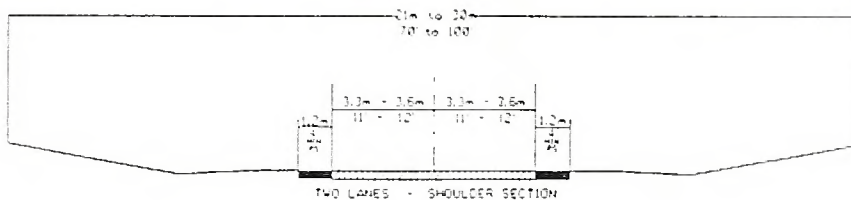


## TYPICAL THOROUGHFARE CROSS SECTIONS FOR ACCOMMODATING BICYCLES

N.



O.



P.

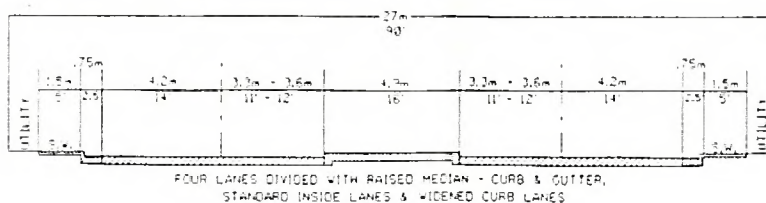


FIGURE 12





**APPENDIX C**

**THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS**

10 - 1

10 - 1





**APPENDIX C**  
**THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS**

FACILITY & SECTION	EXISTING			CAPACITY CURRENT (FUTURE)	1994 ADT	2020 ADT	RECOMMENDED	
	X - DIST MI	SECTION RDWY FT	ROW FT				X-SECTION RDWY	ROW FT
<b>ADDALL ROAD (SR 1230)</b> Moore County - SR 1225	0.60	18	NA	(12,000)	700	1,500	K	70
<b>ARMY ROAD (SR 1219)</b> SR 1225 - SR 1214	1.20	22	NA	11,000	1,300	3,500	ADQ	ADQ
SR 1214 - NC 211	2.40	22	NA	11,000	1,300	3,500	ADQ	ADQ
<b>BOWEN ROAD (SR 1411)</b> US 401 - SR 1412	0.90	18	NA	(15,000)	290	4,000	H	70
<b>BROWN ROAD (SR 1302)</b> US 401 - SR 1303	3.70	20	60	(12,000)	1,600	5000	K	70
<b>CAMDEN ROAD (SR 1003)</b> NC 20 - SR 1441	8.80	18	60	(12,000)	1,400	3000	K	70
SR 1441 - Cumberland Co.	1.30	20	60	(25,000)	5,580	8500	F	94
<b>CHICKEN ROAD (SR 1225)</b> Moore County - US 15-501	1.40	20	NA	10,000	3,500	3,500	ADQ	ADQ
US 15-501 - SR 1219	2.00	22	NA	11,000	3,500	3,500	ADQ	ADQ
<b>CLUB POND ROAD (SR 1408)</b> US 401 - SR 1406	1.50	22	NA	11,000	200	1,000	ADQ	ADQ
SR 1406 - SR 1422	0.15	22	NA	11,000	200	1,000	ADQ	ADQ
<b>DAVIS ROAD (SR 1441)</b> SR 1003 - Robeson County	0.60	20	NA	(12,000)	1,819	5,000	K	70
<b>DUFFIE ROAD (SR 1113)</b> SR 1105 - Robeson County	3.80	20	60	10,000	550	2,000	ADQ	ADQ
<b>EVERITT ROAD (SR 1440)</b> SR 1003 - Robeson County	0.70	22	NA	11,000	3,312	5,000	ADQ	ADQ
<b>GALLAWAY ROAD (SR 1214)</b> Moore County - SR 1219	3.40	18	NA	(12,000)	949	2,500	K	70
SR 1219 - NC 211	6.20	18	NA	(12,000)	700	1,500	K	70
<b>GIBSON ROAD (SR 1124)</b> US 401 - SR 1105	7.30	18	NA	(12,000)	300	1,000	K	70
ADQ - ADEQUATE NA - NOT AVAILABLE								

**APPENDIX C**  
**THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS**

FACILITY & SECTION	EXISTING			CAPACITY CURRENT (FUTURE)	1994 ADT	2020 ADT	RECOMMENDED X-SECTION	
	X - DIST MI	SECTION RDWY FT	ROW FT				RDWY	ROW FT
<b>HENDRIX ROAD (SR 1432)</b>								
SR 1105 - SR 1003	2.30	18	60	(12,000)	800	2,000	K	70
SR 1003 - SR 1422	1.80	20	60	(12,000)	800	3,000	K	70
<b>JOHNSON MILL ROAD (SR 1409)</b>								
US 401 - US 401	3.70	20	60	10,000	170	800	ADQ	ADQ
<b>JORDAN ROAD (SR 1104)</b>								
Scotland County - SR 1105	4.00	20	NA	10,000	490	800	ADQ	ADQ
<b>MCDUGAL ROAD (SR 1305)</b>								
US 401 - Fort Bragg	1.60	22	60	(25,000)	4,650	9,000	F	94
<b>MONROE ROAD (SR 1413)</b>								
US 401 - SR 1406	3.10	20	NA	(15,000)	700	3,500	H	70
SR 1406 - SR 1422	1.50	18	NA	(12,000)	350	1,500	K	70
SR 1422 - SR 1003	3.10	18	NA	(12,000)	1,000	3,000	K	70
<b>NC 20</b>								
SR 1453 - SR 1105	3.20	22	60	(12,000)	2,000	3,500	K	70
SR 1105 - Robeson County	4.10	20	60	(12,000)	1,500	3,000	K	70
<b>NC 211</b>								
Moore County - SR 1219	5.40	24	VAR	(40,000)	7,500	16,500	F	220
SR 1219 - SR 1214	3.30	24	60	(40,000)	7,000	13,000	F	220
SR 1214 - SR 1203	3.50	24	60	(40,000)	7,000	8,500	F	220
SR 1146 - SR 1001	1.60	22	60	11,000	4,800	6,500	ADQ	ADQ
SR 1001 - SR 1105	3.20	22	60	11,000	3,500	3,500	ADQ	ADQ
SR 1105 - Robeson County	3.80	22	60	11,000	3,800	4,000	ADQ	ADQ
<b>NC 211 BYPASS</b>								
SR 1202 - SR 1213	1.70	18	NA	(12,000)	600	6,500	K	70
SR 1213 - SR 1203	0.80	(24)	-	(12,000)	-	6,500	K	70
SR 1203 - SR 1206	1.10	18	NA	(12,000)	200	5,500	K	70
SR 1206 - US 401	1.80	18	NA	(12,000)	200	5,500	K	70
US 401 - SR 1116	2.40	18	NA	(12,000)	600	5,500	K	70
SR 1116 - NC 211	1.80	18	NA	(12,000)	260	5,000	K	70
<b>OLD MAXTON ROAD (SR 1116)</b>								
NC 211 - SR 1139	2.20	22	NA	11,000	3,000	4,500	ADQ	ADQ
SR 1139 - SR 1134	2.10	22	NA	11,000	1,400	2,500	ADQ	ADQ
SR 1134 - SR 1105	4.80	22	NA	11,000	700	1,500	ADQ	ADQ
ADQ - ADEQUATE NA - NOT AVAILABLE								

**APPENDIX C**  
**THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS**

FACILITY & SECTION	EXISTING			CAPACITY CURRENT (FUTURE)	1994 ADT	2020 ADT	RECOMMENDED X-SECTION	
	X - DIST MI	SECTION RDWY FT	ROW FT				RDWY	ROW FT
<b>OLD WIRE ROAD (SR 1105)</b>								
Robeson County - SR 1104	1.60	18	60	(12,000)	1,100	3,000	K	70
SR 1104 - SR 1113	1.80	20	60	(12,000)	1,100	3,000	K	70
SR 1113 - NC 211	3.20	20	60	(12,000)	1,400	3,000	K	70
NC 211 - SR 1001	1.80	18	60	(12,000)	1,200	3,500	K	70
SR 1001 - NC 20	2.70	18	60	(12,000)	1,200	3,500	K	70
NC 20 - SR 1432	0.80	20	60	(12,000)	1,200	3,500	K	70
<b>PARKER CHURCH RD. (SR 1412)</b>								
SR 1409 - SR 1406	1.80	18	NA	(15,000)	480	4,000	H	70
SR 1406 - SR 1422	1.20	18	NA	(12,000)	480	2,000	K	70
<b>PHILLIPI CHURCH (SR 1422)</b>								
SR 1406 - SR 1432	3.12	18	NA	(12,000)	1,300	2,500	K	70
SR 1432 - SR 1413	0.40	18	NA	(12,000)	1,500	4,000	K	70
SR 1413 - SR 1406	4.00	18	NA	(12,000)	1,500	4,000	K	70
<b>PLANK ROAD</b>								
NC 211 - Cumberland Cty.	14.0	24	NA	(25,000)	9,500	15,000	F	94
<b>RITTER ROAD (SR 1424)</b>								
SR 1406 - Cumberland Cty.	0.70	18	NA	(12,000)	370	2,500	K	70
<b>ROCKFISH ROAD (SR 1406)</b>								
US 401 Bus. - SR 1422	7.20	20	NA	(25,000)	4,650	9,000	F	94
SR 1422 - SR 1003	3.10	20	NA	(25,000)	2,800	7,500	F	94
<b>SCULL ROAD (SR 1303)</b>								
SR 1302 - US 401	1.00	20	60	10,000	1,500	5,000	ADQ	ADQ
<b>SHANNON ROAD (SR 1001)</b>								
NC 211 - SR 1005	2.20	18	NA	(12,000)	1,300	4,000	K	70
SR 1005 - Robeson County	3.50	18	NA	(12,000)	1,400	3,000	K	70
<b>TOWNSEND ROAD (SR 1410)</b>								
SR 1409 - SR 1406	1.70	20	60	10,000	110	750	ADQ	ADQ
<b>TOWNSEND ROAD (SR 1420)</b>								
SR 1418 - Cumberland Cty.	0.40	20	NA	(25,000)	5,390	9,500	F	94
ADQ - ADEQUATE NA - NOT AVAILABLE								



**APPENDIX C**  
**THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS**

FACILITY & SECTION	EXISTING			CAPACITY CURRENT (FUTURE)	1994 ADT	2020 ADT	RECOMMENDED X-SECTION	
	X - DIST MI	SECTION RDWY FT	ROW FT				RDWY	ROW FT
<b>TURNPIKE ROAD (SR 1203)</b>								
Scotland County - SR 1202	3.10	22	60	11,000	600	2,000	ADQ	ADQ
SR 1202 - NC 211	4.60	24	60	12,000	1,400	3,500	ADQ	ADQ
<b>US 15-501</b>								
Scotland Cty. - Moore Cty.	3.50	24	100	12,000	3,500	6,500	ADQ	ADQ
<b>US 401</b>								
Scotland County - SR 1207	5.70	24	100	(40,000)	4,832	11,500	F	250
SR 1207 - Raeford	1.60	24	100	(40,000)	4,832	11,500	F	250
Raeford - US 401 Business	1.20	24	100	(40,000)	9,700	23,000	F	250
US 401 Business - SR 1303	1.40	48	100	40,000	9,700	23,000	ADQ	ADQ
SR 1303 - SR 1411	1.50	48	100	40,000	9,700	23,000	ADQ	ADQ
SR 1411 - SR 1413	1.30	48	100	40,000	11,700	25,000	ADQ	ADQ
SR 1413 - SR 1418	1.60	48	100	40,000	11,700	25,000	ADQ	ADQ
SR 1418 - Cumberland Cty.	0.60	48	100	40,000	11,700	25,000	ADQ	ADQ
<b>US 401 Business</b>								
Raeford - US 401	1.30	22	100	11,000	3,900	7,000	ADQ	ADQ
<b>VASS ROAD (SR 1300)</b>								
Plank Road - SR 1310	2.40	18	NA	(12,000)	500	2,500	K	70
<b>WALTERS ROAD (SR 1211)</b>								
SR 1215 - SR 1203	3.10	18	NA	(12,000)	400	800	K	70
<b>WAYSIDE ROAD (SR 1418)</b>								
SR 1406 - SR 1420	0.40	20	60	(25,000)	2,700	7,000	F	94
SR 1420 - US 401	2.80	20	60	(25,000)	1,200	6,500	F	94
ADQ - ADEQUATE NA - NOT AVAILABLE								

**APPENDIX C - METRIC VERSION**  
**THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS**

FACILITY & SECTION	EXISTING			CAPACITY CURRENT (FUTURE)	1994 ADT	2020 ADT	RECOMMENDED X-SECTION	
	X - DIST km	SECTION RDWY ROW meters					RDWY	ROW meters
<b>ADDALL ROAD (SR 1230)</b> Moore County - SR 1225	0.96	5.4	NA	(12,000)	700	1,500	K	21
<b>ARMY ROAD (SR 1219)</b> SR 1225 - SR 1214	1.92	6.6	NA	11,000	1,300	3,500	ADQ	ADQ
SR 1214 - NC 211	3.84	6.6	NA	11,000	1,300	3,500	ADQ	ADQ
<b>BOWEN ROAD (SR 1411)</b> US 401 - SR 1412	1.44	5.4	NA	(15,000)	290	4,000	H	21
<b>BROWN ROAD (SR 1302)</b> US 401 - SR 1303	5.92	6.0	18	(12,000)	1,600	5000	K	21
<b>CAMDEN ROAD (SR 1003)</b> NC 20 - SR 1441	14.08	5.4	18	(12,000)	1,400	3000	K	21
SR 1441 - Cumberland Co.	2.08	6.0	18	(25,000)	5,580	8500	F	28.2
<b>CHICKEN ROAD (SR 1225)</b> Moore County - US 15-501	2.24	6.0	NA	10,000	3,500	3,500	ADQ	ADQ
US 15-501 - SR 1219	3.20	6.6	NA	11,000	3,500	3,500	ADQ	ADQ
<b>CLUB POND ROAD (SR 1408)</b> US 401 - SR 1406	2.40	6.0	NA	11,000	200	1,000	ADQ	ADQ
SR 1406 - SR 1422	3.25	6.0	NA	11,000	200	1,000	ADQ	ADQ
<b>DAVIS ROAD (SR 1441)</b> SR 1003 - Robeson County	0.96	6.0	NA	(12,000)	1,819	5,000	K	21
<b>DUFFIE ROAD (SR 1113)</b> SR 1105 - Robeson County	6.08	6.0	18	10,000	550	2,000	ADQ	ADQ
<b>EVERITT ROAD (SR 1440)</b> SR 1003 - Robeson County	1.12	6.6	NA	11,000	3,312	5,000	ADQ	ADQ
<b>GALLAWAY ROAD (SR 1214)</b> Moore County - SR 1219	5.44	5.4	NA	(12,000)	949	2,500	K	21
SR 1219 - NC 211	9.92	5.4	NA	(12,000)	700	1,500	K	21
<b>GIBSON ROAD (SR 1124)</b> US 401 - SR 1105	11.68	5.4	NA	(12,000)	300	1,000	K	21
ADQ - ADEQUATE NA - NOT AVAILABLE								

**APPENDIX C - METRIC VERSION**  
**THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS**

FACILITY & SECTION	EXISTING			CAPACITY CURRENT (FUTURE)	1994 ADT	2020 ADT	RECOMMENDED X-SECTION	
	X - DIST km	SECTION RDWY meters	ROW meters				RDWY	ROW meters
<b>HENDRIX ROAD (SR 1432)</b>								
SR 1105 - SR 1003	3.68	5.4	18	(12,000)	800	2,000	K	21
SR 1003 - SR 1422	2.88	6.0	18	(12,000)	800	3,000	K	21
<b>JOHNSON MILL ROAD (SR 1409)</b>								
US 401 - US 401	5.92	6.0	18	10,000	170	800	ADQ	ADQ
<b>JORDAN ROAD (SR 1104)</b>								
Scotland County - SR 1105	6.40	6.0	NA	10,000	490	800	ADQ	ADQ
<b>MCDUGAL ROAD (SR 1305)</b>								
US 401 - Fort Bragg	2.56	6.6	18	(25,000)	4,650	9,000	F	28.2
<b>MONROE ROAD (SR 1413)</b>								
US 401 - SR 1406	4.96	6.0	NA	(15,000)	700	3,500	H	21
SR 1406 - SR 1422	2.40	5.4	NA	(12,000)	350	1,500	K	21
SR 1422 - SR 1003	4.96	5.4	NA	(12,000)	1,000	3,000	K	21
<b>NC 20</b>								
SR 1453 - SR 1105	5.12	6.6	18	(12,000)	2,000	3,500	K	21
SR 1105 - Robeson County	6.56	6.0	18	(12,000)	1,500	3,000	K	21
<b>NC 211</b>								
Moore County - SR 1219	8.64	7.2	VAR	(40,000)	7,500	16,500	F	66
SR 1219 - SR 1214	5.28	7.2	18	(40,000)	7,000	13,000	F	66
SR 1214 - SR 1203	5.60	7.2	18	(40,000)	7,000	8,500	F	66
SR 1146 - SR 1001	2.56	6.6	18	11,000	4,800	6,500	ADQ	ADQ
SR 1001 - SR 1105	5.12	6.6	18	11,000	3,500	3,500	ADQ	ADQ
SR 1105 - Robeson County	6.08	6.6	18	11,000	3,800	4,000	ADQ	ADQ
<b>NC 211 BYPASS</b>								
SR 1202 - SR 1213	2.72	5.4	NA	(12,000)	600	6,500	K	21
SR 1213 - SR 1203	1.28	7.2	-	(12,000)	-	6,500	K	21
SR 1203 - SR 1206	1.76	5.4	NA	(12,000)	200	5,500	K	21
SR 1206 - US 401	2.88	5.4	NA	(12,000)	200	5,500	K	21
US 401 - SR 1116	3.84	5.4	NA	(12,000)	600	5,500	K	21
SR 1116 - NC 211	2.88	5.4	NA	(12,000)	260	5,000	K	21
<b>OLD MAXTON ROAD (SR 1116)</b>								
NC 211 - SR 1139	3.52	6.6	NA	11,000	3,000	4,500	ADQ	ADQ
SR 1139 - SR 1134	3.36	6.6	NA	11,000	1,400	2,500	ADQ	ADQ
SR 1134 - SR 1105	7.68	6.6	NA	11,000	700	1,500	ADQ	ADQ
ADQ - ADEQUATE NA - NOT AVAILABLE								



**APPENDIX C - METRIC VERSION**  
**THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS**

FACILITY & SECTION	EXISTING			CAPACITY CURRENT (FUTURE)	1994 ADT	2020 ADT	RECOMMENDED X-SECTION	
	X - DIST km	SECTION RDWY meters	ROW meters				RDWY	ROW meters
<b>OLD WIRE ROAD (SR 1105)</b>								
Robeson County - SR 1104	2.56	5.4	18	(12,000)	1,100	3,000	K	21
SR 1104 - SR 1113	2.88	6.0	18	(12,000)	1,100	3,000	K	21
SR 1113 - NC 211	5.12	6.0	18	(12,000)	1,400	3,000	K	21
NC 211 - SR 1001	2.88	5.4	18	(12,000)	1,200	3,500	K	21
SR 1001 - NC 20	4.32	5.4	18	(12,000)	1,200	3,500	K	21
NC 20 - SR 1432	1.28	6.0	18	(12,000)	1,200	3,500	K	21
<b>PARKER CHURCH RD. (SR 1412)</b>								
SR 1409 - SR 1406	2.88	5.4	NA	(15,000)	480	4,000	H	21
SR 1406 - SR 1422	1.92	5.4	NA	(12,000)	480	2,000	K	21
<b>PHILLIPI CHURCH (SR 1422)</b>								
SR 1406 - SR 1432	4.99	5.4	NA	(12,000)	1,300	2,500	K	21
SR 1432 - SR 1413	0.64	5.4	NA	(12,000)	1,500	4,000	K	21
SR 1413 - SR 1406	6.40	5.4	NA	(12,000)	1,500	4,000	K	21
<b>PLANK ROAD</b>								
NC 211 - Cumberland Cty.	22.4	7.2	NA	(25,000)	9,500	15,000	F	28.2
<b>RITTER ROAD (SR 1424)</b>								
SR 1406 - Cumberland Cty.	1.12	5.4	NA	(12,000)	370	2,500	K	21
<b>ROCKFISH ROAD (SR 1406)</b>								
US 401 Bus. - SR 1422	11.52	6.0	NA	(25,000)	4,650	9,000	F	28.2
SR 1422 - SR 1003	4.96	6.0	NA	(25,000)	2,800	7,500	F	28.2
<b>SCULL ROAD (SR 1303)</b>								
SR 1302 - US 401	1.60	6.0	18	10,000	1,500	5,000	ADQ	ADQ
<b>SHANNON ROAD (SR 1001)</b>								
NC 211 - SR 1005	3.52	5.4	NA	(12,000)	1,300	4,000	K	21
SR 1005 - Robeson County	5.60	5.4	NA	(12,000)	1,400	3,000	K	21
<b>TOWNSEND ROAD (SR 1410)</b>								
SR 1409 - SR 1406	2.72	6.0	18	10,000	110	750	ADQ	ADQ
<b>TOWNSEND ROAD (SR 1420)</b>								
SR 1418 - Cumberland Cty.	0.64	6.9	NA	(25,000)	5,390	9,500	F	28.2
<p style="text-align: center;">ADQ - ADEQUATE  NA - NOT AVAILABLE</p>								

**APPENDIX C - METRIC VERSION**  
**THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS**

FACILITY & SECTION	EXISTING			CAPACITY CURRENT (FUTURE)	1994 ADT	2020 ADT	RECOMMENDED X-SECTION	
	X - DIST MI	SECTION RDWY FT	ROW FT				RDWY	ROW meter
<b>TURNPIKE ROAD (SR 1203)</b>								
Scotland County - SR 1202	4.96	6.6	18	11,000	600	2,000	ADQ	ADQ
SR 1202 - NC 211	7.36	7.2	18	12,000	1,400	3,500	ADQ	ADQ
<b>US 15-501</b>								
Scotland Cty. - Moore Cty.	5.60	7.2	30	12,000	3,500	6,500	ADQ	ADQ
<b>US 401</b>								
Scotland County - SR 1207	9.12	7.2	30	(40,000)	4,832	11,500	F	75
SR 1207 - Raeford	2.56	7.2	30	(40,000)	4,832	11,500	F	75
Raeford - US 401 Business	1.92	7.2	30	(40,000)	9,700	23,000	F	75
US 401 Business - SR 1303	2.24	14.4	30	40,000	9,700	23,000	ADQ	ADQ
SR 1303 - SR 1411	2.40	14.4	30	40,000	9,700	23,000	ADQ	ADQ
SR 1411 - SR 1413	2.08	14.4	30	40,000	11,700	25,000	ADQ	ADQ
SR 1413 - SR 1418	2.56	14.4	30	40,000	11,700	25,000	ADQ	ADQ
SR 1418 - Cumberland Cty.	0.96	14.4	30	40,000	11,700	25,000	ADQ	ADQ
<b>US 401 Business</b>								
Raeford - US 401	2.08	6.8	30	11,000	3,900	7,000	ADQ	ADQ
<b>VASS ROAD (SR 1300)</b>								
Plank Road - SR 1310	3.84	5.4	NA	(12,000)	500	2,500	K	21
<b>WALTERS ROAD (SR 1211)</b>								
SR 1215 - SR 1203	4.96	5.4	NA	(12,000)	400	800	K	21
<b>WAYSIDE ROAD (SR 1418)</b>								
SR 1406 - SR 1420	0.64	6.0	18	(25,000)	2,700	7,000	F	28.2
SR 1420 - US 401	4.48	6.0	18	(25,000)	1,200	6,500	F	28.2
ADQ - ADEQUATE NA - NOT AVAILABLE								





